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Product Highlight

Data Dictionary: Role Widening

By Lois Paul
CW Staff

The data dictionary's function is expanding to encompass management of the entire corporate data resource, rather than just the data in the data base management system.

At least this is the viewpoint of product managers surveyed by *Computerworld* for a sampling of major IBM-compatible data dictionary products (see charts on Pages 10 and 11).

The move is toward use of the data dictionary to drive other functions and to be more usable by non-DP professionals for applications such as business planning. The major needs, therefore, are user-friendly interfaces and extensibility of function, which are provided by many data dictionaries via support for user-defined entities. Six of the 10 major IBM-compatible data dictionaries that were surveyed support user-defined entities.

Ben McCarley, product manager for University Computing Co. UCC Ten, said the data dictionary is moving from its original design to more complete control of the entire DP unit, instead of just the DBMS. "We are looking to support more of

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Increased Software Competition Should Benefit Users, Exec Says

By Lois Paul
CW Staff

ANAHEIM, Calif. — The increased competition in the packaged software market in the 1980s spells good news for users because it forces vendors to stress better quality and specialization over the "luxury" of one-on-one sales efforts.



CW Photo by L. Paul

Bruce T. Coleman

Also Unveils Operating System

Harris Upgrades H80, H100 Minis

By Tim Scannell
CW Staff

FORT LAUDERDALE, Fla. — Harris Corp.'s Computer Systems Division has upgraded two of its high-performance minicomputer systems, reportedly allowing each to handle up to four times the amount of executable code as in previous machines.

In addition, the firm has unveiled a second operating system for its line of virtual memory minicomputers. The newest operating system was de-

signed to take advantage of the extended memory features on a number of Harris processors and features an automated data base for remote job entry protocols.

The H80-1A and H100-1A computers are extensions of Harris H80 and H100 machines. Like their predecessors, the new systems are geared for interactive time-sharing, multi-stream batch, multiple RJE and real-time processing, a spokeswoman said.

The H80-1A and H100-1A are based

on a redesigned central processor that incorporates an 18-bit rather than a 16-bit program counter. This feature allows the computer to accommodate programs with up to 768K bytes of executable code per user — four times the maximum allowed with the previous computers, the spokeswoman explained.

Like the H80 and H100, the -1A versions have a hardware-supported virtual memory system with more than 6M bytes of virtual memory, can support up to 32 concurrent interactive users and can address up to 768K bytes of real memory. The systems were also designed around a system bus with a maximum 19M byte/sec transfer rate, have a CPU feature that overlaps instruction fetch with execution to speed processing and can be fitted with an optional floating-point processing unit, the spokeswoman noted.

Both systems support up to 24 logical I/O channels that are specifically geared for high, medium and slow speed as well as user-designed pe-

(Continued on Page 8)

DG Gives Its 16-Bit Minis Multiprocessing Software

By Tim Scannell
CW Staff

WESTBORO, Mass. — Data General Corp. last week unveiled a real-time multiprocessing operating system for its 16-bit minicomputers and a high-level system development language for process control and computer-aided design and manufacturing applications.

At the same time, the firm also introduced two low-end 16-bit computers — initially targeted for the OEM market — that incorporate a "micro-Eclipse" architecture and are said to be 70% as powerful as the firm's larger S/140 computer system but cost-

ing half as much (story on Page 6).

A key point of DG's Micro Processor Advanced Operating System (MP/AOS), according to the vendor, is that its inherent compatibility creates a pathway for users of the firm's older Nova series computers to move

(Continued on Page 6)

House Warns Norad DP Needs Immediate Attention

By Jake Kirchner

CW Washington Bureau

WASHINGTON, D.C. — Computer problems of the Defense Department's North American Aerospace Defense Command have reached a "critical stage" and require immediate attention, a congressional investigation has found.

Completing a year-long study of Norad equipment and management, the House Government Operations Committee reported recently that without immediate corrective action, "it is unlikely that this country will have an up-to-date and effective attack warning system."

The Capitol Hill study followed a series of equipment failures at the Norad facility at Cheyenne Mountain, Colo., in June 1980. The failures led to false missile attack alerts, which prompted Strategic Air Command forces to go to a heightened state of readiness until the false alarms were recognized.

The Department of Defense eventually blamed faulty equipment for most of the problems and suggested cumbersome federal DP acquisition regulations have hindered the department in its efforts to upgrade Norad and other military systems [CW, May 25].

The House committee report, however, referred to testimony delivered

last year that indicated, the report said, that the "acquisition process was in no way responsible for the false alerts."

"Further, it was found that the Norad facility had been mismanaged over the last decade by the Air Force,

(Continued on Page 8)

Amendment Calls For Long Lines As Subsidiary

By Phil Hirsch

CW Washington Bureau

WASHINGTON, D.C. — An amendment that would require AT&T to convert its revenue-rich Long Lines Division into a separate subsidiary is about to be added to H.R. 5158, the House of Representatives' draft rewrite of the Communications Act of 1934, a knowledgeable source said here last week.

According to the source, AT&T would own 90% of the subsidiary and outsiders would own 10%. The subsidiary would be barred from offering local exchange service and its relationship to AT&T would have to be "very arms length" — in other words, sharing of property, employ-

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IBM Reentry Into Remote Services Market Seen No Threat to U.S. Suppliers, Users

By Bob Johnson

CW New York Bureau

NEW YORK — IBM's reappearance in the remote computing services market is no threat to existing U.S. suppliers and their end-user clients. However, the company's offerings of productivity services should be perceived by the American DP industry as a method of boosting hardware sales.

So concluded speakers at Quantum Science Corp.'s conference held here recently on what IBM's impact will be on time-sharing services and hardware suppliers in the U.S.

Basing their predictions on IBM's past and present actions in the European arena, speakers stated that IBM's Information Network Services (INS) marketing strategy can be expected to resemble its remote services operations overseas.

Dr. Mirek J. Stevenson, Quantum's chairman, said the new IBM integrated user support service will serve to enhance the company's hardware sales. It will provide a convenient vehicle to assist DP departments in performing program development and system conversion in order to convert from one IBM system to another — and from competing systems to IBM.

"Of the three distinct services offered by IBM in Europe, only the productivity services have been introduced in the U.S. at this time," Stevenson said.

Stevenson noted that in Europe IBM has gone after two specific types of users, and that same strategy appears to be evolving in U.S. DP departments. End users with little DP experience are IBM's prime targets,

according to Quantum's research.

Stevenson said that in the DP departments where there is testing for new applications or systems software (productivity services), the objective is to get users to use IBM in-house alternatives and offer them simple conversion aids for ICL, Inc., Burroughs Corp. and Honeywell, Inc. systems.

As far as inexperienced users are concerned, IBM offers its remote computing services as an alternative source of computing. The idea is to make using IBM products the simplest and most painless way of computing, Stevenson said.

'Transient Users'

W. Harry Hoyle, president of Quantum's European operation, said that IBM's U.S. INS is aimed at DP departments, which he labeled "transient users" with typical project durations of less than two years. "Productivity services in the U.S. and Europe are supported on a regional basis and they are targeted at DP departments with IBM hardware or for conversion of competitive sites," Hoyle explained.

Hoyle pointed out that IBM's U.S. productivity services have many of the same features as its European services, which have proven successful over the last 10 years.

Those features include CMS or TSO command languages with HELP features; training courses using the Interactive Instructional System (IIS); Plancode/VSAPL software versions that allow in-house hardware migration; and conversion aids for Honeywell and Burroughs users, such as Cobol cross-compilers and file con-

version utilities, he said.

Quantum said that instruction in how to use these tools is given by IBM at local productivity service centers permitting projects to be easily implemented for users in-house.

The time-sharing area offering end users software programs is being ignored by IBM here in the U.S. — the same way it has been in Europe, according to Graham Taylor, a senior consultant at Quantum. He pointed out that IBM's INS will be offered in only seven cities with the central site in Tampa, Fla.

Taylor claimed that such a setup could not support a national application-based time-sharing network. "There are very few end-user applications being pushed in Europe, and the structure of the INS in the U.S. reflects the same thrust away from the end user," he said.

Quantum also pointed to certain pricing structures IBM is using as further evidence that hardware sales are its primary objective. Thomas Colangelo, another Quantum consultant, explained that IBM's prime-time connect rate in the 110 to 1,200 bit/sec mode is \$5/hour, while General Electric Information Services Co. (Geisco) rates are \$18/hour.

Colangelo said that this indicates IBM expects users to be on-line for long periods of time, which smacks of project development, as opposed to Geisco users, who are expected to be doing production or accessing data bases.

"IBM has the advantage for program development, while Geisco has the advantage for end-user-oriented and value-added applications," Colangelo stated.

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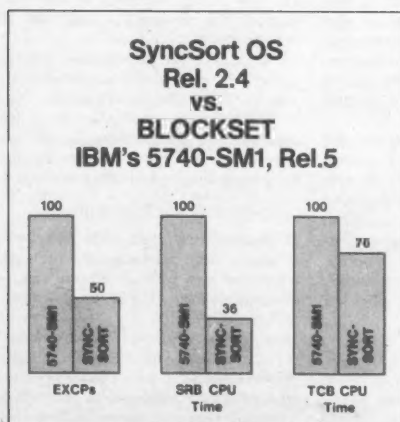
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J. P. Morgan & Co.

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Bankers Trust New York Corp.
Western Bancorp.
First Chicago Corp.

2. Here are the 10 largest life-insurance companies.*

How many use SyncSort? _____

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Metropolitan
Equitable Life Assurance
Aetna Life
New York Life

John Hancock Mutual
Connecticut General Life
Travelers
Northwestern Mutual
Teachers Insurance & Annuity

3. Here are the 10 largest utility companies.*

How many use SyncSort? _____

AT&T
General Telephone & Electronics
Southern Company
Pacific Gas & Electric
American Electric Power

Commonwealth Edison
Southern California Edison
Consolidated Edison
Middle South Utilities
Public Service Electric & Gas

4. Of the 30 companies listed above, how many use SyncSort? _____

CORRECT ANSWERS: SyncSort is now the sorting choice of ...

1. 9 of the 10 largest commercial-banking companies.

2. 9 of the 10 largest life-insurance companies.

3. 8 of the 10 largest utility companies.

4. 26 of the 30 companies listed above.

EXPLANATION OF ANSWERS: Sorry, professional ethics prevent us from telling you specifically which companies on the list use SyncSort. But we'll be only too glad to tell you why:

• **Performance:** SyncSort has a higher IQ than any of its "competitors"—the result of the ever widening "sort-performance gap" between our programs and IBM's. SyncSort simply does more sorting work for far fewer resources, as the charts at left indicate. And to busy processors like those above, that's a matter of practical, not academic, interest.

• **Productivity:** For programmers, SyncSort removes the "grind" from sorting. Using features like INCLUDE/OMIT, SUM, INREC/OUTREC and others, the time required for simple applications can often be reduced from five programmer days to one programmer day.

• **Service:** Need a little help on tricky sorting questions? Call our Technical Service faculty. They're experts at providing fast, accurate and sympathetic coaching. More than 85% of all requests for help are resolved within 24 hours.

GRADING YOURSELF: If you answered Question 4 as follows...

• **23 to 30 companies use SyncSort**—give yourself a big, fat A.

You're so smart you're probably a SyncSort user already.

• **15 to 22 companies use SyncSort**—give yourself a B. SyncSort can help you get top-grade sorting on the final exam.

• **7 to 14 companies use SyncSort**—give yourself a C. Go back to the library and review sorting problems and how SyncSort solves them.

• **0 to 6 companies use SyncSort**—give yourself a D. Your sorting is in trouble. Call us immediately for remedial coaching!

*According to Fortune Magazine 1981.

McCormack & Dodge, Walker and Informatics

By Lois Paul
CW Staff

ANAHEIM, Calif. — Among the handful of products introduced at Software/Expo West here last week was McCormack & Dodge Corp.'s human resources software package, which it recently acquired from Dyatron, Inc. and which it renamed Human Resource Plus (H/R Plus) [CW, March 8].

Available on IBM and plug-compatible mainframes, H/R Plus consists of personnel, employee benefit accounting and payroll modules that can be combined to meet a user's individual needs, the vendor explained.

An on-line capability is said to provide H/R Plus users with the ability to perform real-time inquiry and maintenance with complete editing, new record addition and data entry.

The software package is designed to interface with McCormack & Dodge's general ledger financial analysis package, G/L Plus. It is priced from \$40,000 to \$100,000, depending on the user's configuration. Further details can be obtained from the vendor at 560 Hillside Ave., Needham Heights, Mass. 02194.

General Ledger Package

Walker Interactive Products announced an interactive general ledger package designed to run on IBM and plug-compatible systems as well as Hewlett Packard Co. and Prime Computer, Inc. equipment.

The Integrated Interactive General Ledger (II/GL) package reportedly includes real-time general ledger balance updating and a closing management facility designed to enable controllers to track normal processes and to identify those items needing special attention before closing.

The software also includes Fast Builder, a feature that uses multipurpose tables to define and integrate new account relationships, and Reality/DSS (Decision Support System),

which is said to enable users to integrate budget forecasting, planning and a decision support system.

Walker Interactive Products has priced II/GL from \$50,000, which includes installation, training and warranty. Further information can be obtained from the vendor at 100 Mission St., San Francisco, Calif. 94105.

Informatics, Inc. introduced Informaticom, which it described as a system interface to link personal computers with large IBM and plug-compatible mainframes.

Informaticom can be used as a pro-

grammer's workbench for the preparation of Mark IV applications, either in conjunction with the workstation or as an independent production application, the vendor explained. Informaticom is said to include a multi-level language that prompts new users and can extend functionality to experienced users.

Its other features include a dictionary designed to keep track of user-authorized local files and central data bases, which also defines data being downloaded to the workstation from the central computer. A file manager performs all access

automatically for local data entry functions, data extraction from central data bases and file combination. In addition, local files are secured by password authorization to the workstation, the vendor explained. A query language, report writer and communications handler also are included.

Informaticom is compatible with the IBM OS operating system and uses TSO or CMS communications protocols. Its price ranges from \$20,000 to \$40,000, depending on configuration. The basic configuration includes a 64K-byte micro.

Influence Predicted by '83

Briton Sees Japanese Presence in Software

By Jeffery Beeler

CW West Coast Bureau

ANAHEIM, Calif. — Japan, which has already earned widespread acclaim for its hardware, will soon begin to make its presence felt in software as well, according to British computing executive Chris Codrington.

"I keep hearing that the Japanese aren't going to make much of an impact on the software industry, but I don't believe it," the Interco Ltd. managing director said at last week's Software/Expo West conference. "I expect the Japanese to quickly become a major force on the software scene. They certainly seem to have identified it as one of their primary targets."

In 1976, Japan embarked on an ambitious software development plan that was expected to begin bearing fruit in approximately seven years, Codrington said.

Today, just one year short of its completion date, the effort is already believed to be entering its quality control phase.

If the plan proceeds exactly according to schedule, U.S. users should be-

gin receiving a brand new batch of Japanese-developed software as early as 1983. At least some of the Japanese offerings are expected to be "very significant indeed," Codrington said.

Word of the upcoming Japanese software push appears to contradict the U.S. prevailing view of Japan, which has traditionally been seen as a powerhouse in hardware but a comparative weakling in software. For many Americans, the belief in Japanese software inferiority has long been accepted as an article of faith and has been repeatedly cited as a major cause for optimism for the U.S.' long-term technological out-

look.

But now the comforting notion of Japan's software vulnerability appears to be rapidly losing its validity — a development that may force many U.S. vendors to reassess their long-term business prospects.

The key to Japan's bid for software superiority is its large pool of technical manpower. A total of some 16,000 software engineers are employed at Fujitsu and Nippon Electric Co. alone, and lesser but still substantial numbers of such personnel are also hard at work at companies like Mitsubishi and Matsushita, Codrington said.

Competition Seen Good News

(Continued from Page 1)

change in the 1980s, he predicted, suggesting that we will be seeing more software via mail, through retail stores and by phone. "We cannot afford the luxury of one-on-one sales. The economics won't allow it," he said.

Users of software packages can only benefit from this heightened competition, Coleman said, particularly with companies carving out niches in which to specialize. Support also is becoming a more competitive factor, he continued, with many firms already offering hot lines and others providing built-in diagnostics and remote testing.

"We have to practice what we preach," Coleman continued, noting that this includes using concepts such as top-down structuring and standardized methods. In addition, many firms must look toward embedding other software vendors' products into their own offerings, rather than reinventing the wheel.

Key to Survival

Strong management will be the key to survival and success of software firms in the competitive era, Coleman said, noting that this must include a good balance between technical expertise and management capability. "If we don't have good strong management, we won't be here to serve you in the 1980s."

Taking a count of hands, Coleman estimated that roughly 35% of those attending the session have personal computers. In two years and one month that population will double, he predicted. He said that despite this and the projections for the

growth of personal computer installations (250,000 in 1979 to 33,750,000 in 1990), many high-level managers still do not believe the microcomputers are "for real."

"Microcomputer software packages are surrounding us as users and DP professionals," he said. "We can't escape it." He also pointed to the number of data bases and services available via microcomputers. "Not only are we being exposed to the machines, but to services that we all should have."

"We don't have any choice as users, either," he added. His advice to users was to learn the micro techniques and applications going on now, accept change and internalize it and then convince the nonbelievers that they have to use tools themselves.

Significant Marketplace

Coleman described what he sees as a "significant marketplace" for software that can provide downloading of large systems to microcomputers in the future.

Coincidentally, his firm introduced Informaticom at Software/Expo West, which is a system interface with IBM and plug-compatible mainframes designed to provide the benefits of a personal computer plus access to central computing resources and data bases. (See story above for further details.)

DP professionals will require a different balance and perspective in the 1980s, Coleman explained. More of their time will be spent as educators and innovators, and a tough balance must be struck by them between personal computers, distributed data processing and large systems.

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Among Those Introducing Wares at Expo

processor, 2.4M-byte disk storage and an 18 char./sec printer, according to the vendor, which can be reached at P.O. Box 1452, Canoga Park, Calif. 91304.

Boole and Babbage, Inc. announced enhancements to its Vtam Application Monitor for IBM's System Productivity Facility (VAM/SPF).

Release 3.0 of VAM/SPF includes an expansion of the user-written utility programs and Clists which will execute under SPF Option Six, as well as the availability of response time, transaction and resources usage data in standard Comprehensive Management Facility (CMF) and Resource Management Facility (RMF) reports. Other features of Release 3.0 are a file allocation environment for each signed-on user, improved documentation and a simplified installation procedure, the vendor explained.

VAM/SPF Release 3.0 will be available for general distribution in the second quarter of 1982. The software is priced from \$20,000 to \$40,000, depending on the CPU model, the vendor said from 510 Oakmead Pkwy.,

Sunnyvale, Calif. 94066.

Consumer Systems Corp. introduced Test/IMS, a package designed to speed IBM IMS application development. Test/IMS is said to consolidate simulation and native IMS testing techniques into one testing methodology. It is designed to set up the testing model so programmers can concentrate on IMS application logic rather than simulation modeling.

Designed as a replacement for IBM's batch terminal system, Test/IMS is available for \$16,000 for use on IBM and plug-compatible OS systems and IMS DB/DC systems. Consumer Systems is located at 2107 Swift Drive, Oak Brook, Ill. 60521.

Pioneer Computer Systems Limited

introduced an integrated accounting and production control system called Command for use on Digital Equipment Corp. PDP-11 RSTS and CTS 500 systems.

The menu-driven system includes a data base management system that reportedly allows users to format their own reports without resorting to program level.

The full system is priced at \$32,000. The individual modules can be purchased for between \$2,500 and \$4,000 each, the vendor said from 4 Albion Place, Northampton, NN1 1UD U.K.

Integrated Software Systems Corp. (Issco) has provided standard software interfaces to its Disspla and Tell-A-Graf graphics packages which, in conjunction with plug-in

boards from Texprint, Inc., will enable the software to be used on DEC LA120 terminal printers and Texas Instruments, Inc. Silent 700 data terminals.

The two plug-in boards are Decplot, which is available for \$595 from Texprint for the DEC LA120 terminal printer, and Texplot, which is designed for the TI Silent 700 and is available from Texprint in tested kit form for \$450 or installed for between \$570 and \$615. Texprint is located at 8 Blanchard Road, Burlington, Mass. 01803. The base price of the Disspla or Tell-A-Graf packages from Issco is either \$26,500 or \$28,500, depending on the CPU. Issco is located at 4186 Sorrento Valley Blvd., San Diego, Calif. 92121.

Intel Offers Fast Paging For IBM 4300

PHOENIX — Intel Corp. last week introduced a high-speed paging disk device for IBM 4300 processors operating under DOS/VSE.

The Fast-3815D is a combination hardware/software product. The hardware is similar to Intel's Fast-3815 semiconductor disk available for users of IBM's VM and MVS operating systems.

The software was developed in conjunction with Software Pursuits, Inc., developers of a DOS/VSE-like product, MVT/VSE. That package is also supported by the 3815D, according to Intel.

The 3815D features storage options of 12-, 16- or 24M bytes. It can also be upgraded to the 72M-byte 3805, the vendor said.

The product can reportedly be attached to a 4300 processor without modifying the operating system, and will reportedly enhance I/O performance in large terminal networks with interactive query/response features. It can also improve performance in nonpaging applications.

FBA Device

The 3815D uses IBM's Fixed Block Architecture (FBA), which organizes data into uniform blocks. The Software Pursuits software emulates a standard FBA device to the DOS/VSE operating system and applications software, Intel said.

The unit is available with a two-channel switch that allows the 3815D to be shared between two channels.

A 16M-byte version of the 3815D costs \$125,000 and leases for \$2,755/mo. Software for the unit costs \$5,000 for a package license, \$200/mo for a rental license fee or \$1,800/year for a full-year rental license agreement, the vendor said from 12675 Research Blvd., P.O. Box 9968, Austin, Texas.

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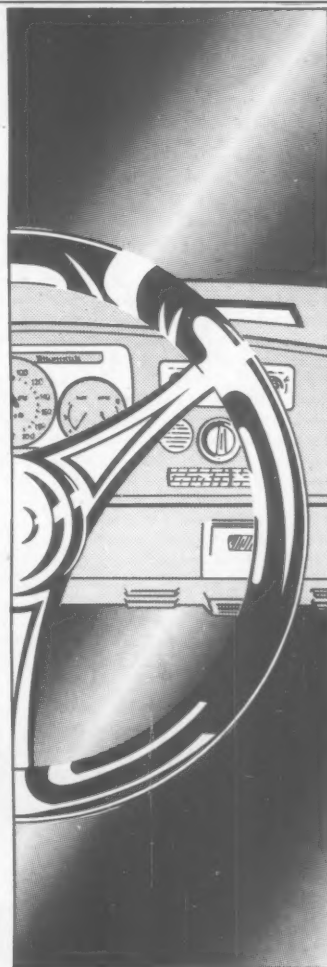
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- ☐ JASPER/JA
- ☐ Job Accounting/Reporting

CW 3/22/82



DG Unwraps Two 'Micro-Eclipse' Processors

By Tim Scannell
CW Staff

WESTBORO, Mass. — Data General Corp. last week beefed up its technical products line and "reaffirmed its commitment" to 16-bit processing by taking the wraps off two processors, both incorporating a recently developed and highly compact micro-Eclipse architecture.

The relatively compact Eclipse S/20 and larger S/120 are designed for industrial and real-time applications and are presently offered on an OEM basis.

For instance, at their press debut in Boston, the S/20 was used to control a miniature model of an automated factory designed by Michael Deisenroth, a professor of industrial and mechanical engineering at Michigan Technological University.

However, the commercial software for the machines is about "95% finished," according to Mary Zak, the S/120 marketing manager, and will soon be available for the commercial end user.

The S/20 and S/120 are said to offer many of the same features available on DG's high-end 16-bit Eclipse computers. The machines primarily compete with Digital Equipment Corp.'s PDP-11/23, 11/23 Plus and 11/24 computers. However, since they are said to have about 70% of the performance of DG's S/140 computer at half the price, they also compete with DG's own Nova 4 computer line.

When asked about any erosion the latest entries might cause to the Nova installed base and impact on future sales, a DG spokesman remarked that the firm currently has no plans to actively replace the Nova 4 line. But, he did admit that the new system's cost and performance benefits might influence users to migrate from the less powerful Nova to the higher end Eclipse computer family.

The S/20 and S/120 systems are architecturally similar to DG's S/140,

but incorporate a single-chip micro-Eclipse central processor that reportedly takes the place of about 200 chips used in the standard Eclipse design. Manufactured by DG's Silicon Valley facility and roughly one quarter the size of a thumbnail, the micro-Eclipse is part of a single-chip processing set consisting of an I/O device and a number of external microcontrollers, according to Jan Pieter Scheerder, DG's manager of hardware product marketing.

The micro-Eclipse also incorporates a number of architectural advances such as instruction prefetching, parallel internal data paths and a control

store structure to CPU speed execution time.

The basic S/20 consists of a rack chassis, backplane, power supply, processor board and a single 128K-byte memory board. The system can handle up to three additional memory boards for a total of 512K bytes of 16-bit memory.

Features of the S/20 include the hardware-based Eclipse memory allocation and protection system, which facilitates multiprogram applications, extended 18-bit addressing, memory segmentation support and a variety of I/O, memory write and validity protection devices,

Scheerder noted.

The S/120 is similar to the S/20 except that it has up to 512K bytes of main memory implemented on 64K-bit chips on a single board. The larger system also has a "memory sniffing" feature that consists of a dedicated error checking and correcting chip that corrects single-bit errors and identifies double and selected triple-bit errors.

A 128K-byte S/20 with a Dasher display terminal, 12.5M bytes of Winchester disk storage and a half-bay cabinet costs \$14,320. A similarly configured S/120 with 256K bytes of memory is priced at \$19,350.

DG Unveils Multiprocessing Software

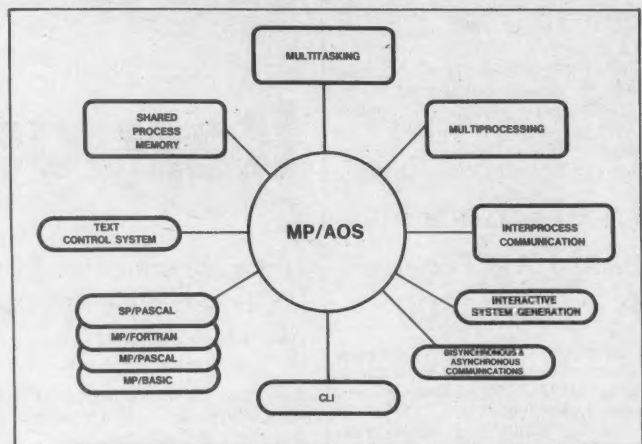
(Continued from Page 1)

up to the more advanced 16-bit Eclipse machines. Previously, programs created on one machine could not be transported to an architecturally different system.

MP/AOS was specifically designed for multitasking applications, such as industrial data acquisition, and can support up to 16 simultaneous processes. In addition, the operating system can handle up to 255 different tasks, reportedly allowing programmers to tailor applications and control a large number of internal activities.

The 16-bit operating system runs on all DG Eclipse computers and requires at least 192K bytes of memory and a minimum of 10M bytes of disk storage. It also needs a minimum of 1.2M bytes of diskette or magnetic tape storage, a DG Dasher console and the Eclipse character and floating-point instruction sets.

A major feature of the MP/AOS software is that it allows users to schedule each programming process and to control overall system activity on a priority basis. This means that certain user-specified tasks can be acted upon before other operations,



System Functionality of MP/AOS Operating System

and valuable CPU time can be restricted to allow more time for particular processes. Christine Wallis, DG's manager of software product marketing, explained.

The operating system is also said to let users separate memory into segments, which are defined as a collection of up to 128 2K-byte memory pages. It also permits the user to send and receive 2K-byte message segments among processes via a full-duplex communications port. Both features were designed to aid data manipulation and can reportedly be used to access large amounts of data faster than by standard disk access methods.

DG's 16-bit real-time operating system also features a shared memory function, which reportedly results in the creation of only one copy of code that is shared by all of the programming processes; a file management routine, which is said to organize files according to an inverted tree structure; device management, which allows the operating system to support up to 255 logical I/O channels and provides three types of I/O transfer; and user device support, which lets users directly control non-standard devices such as a programmed I/O device or a data channel, Wallis said.

Included in the operating system's utilities are a process histogrammer, which measures the execution of each program and identifies possible bottlenecks; an optional text-control system, which includes a full-screen editor, English-language commands

and user-defined keys; and the ability to log disk and memory errors for isolation and repair of faulty modules, according to the vendor.

Since MP/AOS is a superset of MP/OS — DG's single-process, multitasking system for Micronova and Nova processors — OS programs can be developed and used under MP/AOS. Each operating system has native development capabilities, Wallis said.

DG's SP/Pascal language was designed to generate machine code for Eclipse computers and is particularly well-suited for process control and CAD/CAM applications. It is a superset of DG's MP/Pascal and reportedly can run under either DG's MP/AOS or AOS system software.

Software Features

The high-level language supports multitasking and is geared to take advantage of MP/AOS' real-time capabilities. Features of the software include an exception handling extension, which enables programmers to easily recover from runtime, system, or user-defined errors; systems programming extensions; and dynamic-memory management. It also features a variety of program development aids.

The initial license for the MP/AOS software is \$6,500 with subsequent licenses priced at \$1,500 each. SP/Pascal costs \$4,500 for an initial license, \$2,000 for subsequent versions and \$500 for a runtime license.

Delivery on both packages is 90 to 120 days from the firm at 4400 Computer Drive, Westboro, Ma. 01580.

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Harris Beefs Up Two High-Performance Minis

(Continued from Page 1)

ipheral devices and a direct memory access communications processor for linking terminals to the systems, according to the vendor.

Like the previous systems, the H80-1A and H100-1A feature a memory word length of 48 bits, which makes them compatible with all machines in the Harris line. Languages offered with the systems include Fortran, Basic, Cobol, Pascal, APL, RPG, assembler, Snobol and Forgo, a load-and-go Fortran compiler, the spokeswoman said.

The systems are also communications-compatible with IBM 2780/3780 and Hasp II Multileaving; Control Data Corp. 200 UT and Sperry

Univac 1004; and can use Cincom Systems, Inc. Total data base management system, the spokeswoman stated.

Delivery Schedules

The H80-1A and H100-1A are scheduled to be delivered this April and cost \$44,950 and \$55,000, respectively. However, upgrade packages are available for \$9,500 for current users of the H80 and H100 systems. The upgrade kits extend each machine's program counter to 18 bits and allow them to operate under Harris' new operating system, the spokeswoman said.

The virtual operating system (VOS) is structurally similar to the firm's

Vulcan systems package, but can take advantage of extended memory modes offered by the firm. In addition, the new operating system incorporates an automated data base that has autodial, automatic scheduling and load control features, supports Harris' Muse word processing package and has Pascal extensions that support compatible and extended-mode operations, according to the spokeswoman.

VOS/Vulcan Comparisons

Unlike Vulcan, VOS has a user-callable walkback feature in its Fortran 77 compiler for debugging. It also has additional Cobol 74 support, modifications to both the Basic compiler and macro assembler, additional flow control for teletype devices,

new text editor and documentation processor features and an alternate resident system capability.

Like Vulcan, VOS concurrently supports interactive, batch and real-time processing modes as well as eight language processors and six remote job entry protocols, the spokeswoman pointed out.

The latest operating system without the source code is available free of charge to current Harris users. With the source code, VOS costs \$3,000, the vendor said. The maintenance costs for the new operating system is the same for that of Vulcan, \$100/mo.

VOS is available immediately from Harris Corp.'s Computer Systems Division at 2101 Cypress Creek Road, Fort Lauderdale, Fla. 33309.

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House Slams Norad DP

(Continued from Page 1)

the Joint Chiefs of Staff and the Department of Defense, resulting in obsolete computer systems which do not satisfy the requirements of Norad's sensitive mission," the committee said.

"These obsolete systems, coupled with poor management practices and human error, were directly responsible for the false alerts," the report said.

Underlying Cause

The underlying cause of the equipment obsolescence, according to the committee, was the failure of a computer modernization program begun in 1966. "By May of 1981," the report said, "it was more than six years behind schedule and about \$150 million over budget. More importantly, the system only has, at best, an information processing capability of the 1966 systems it replaces."

Although the Department of Defense told the committee last year the false alert problems had been cor-

rected, the report said "the committee is not the least bit reassured by DOD's claims."

"Norad's current computer systems are severely deficient and DOD's efforts to upgrade these systems over the last 15 years have been largely unsuccessful," the report continued. "The committee is alarmed that Norad's critical capabilities have been allowed to deteriorate during this period."

Biting Criticisms

The committee took the opportunity of its Norad report to deliver another in a long string of biting criticisms of the DOD for its DP acquisition and management practices. The Norad failures are directly related to Defense's long-standing problems with its World Wide Military Command and Control System (Wimex), the report said.

"Poor planning and fragmented management which led to the failure of the Norad program also contributed to the serious problems being experienced by [Wimex]," the report charged. In fact, the committee has long maintained that one of Norad's main problems is its tie-in with the Wimex system. Since the 1980 Norad failures, the command has been allowed to develop its systems independent of the Wimex program.

Committee Takes Dead Aim

The committee, chaired by Rep. Jack Brooks (D-Texas), the sponsor of the 1965 law that established current federal DP acquisition regulations, also took dead aim at DOD claims that the regulations and their oversight by the General Services Administration (GSA) have been a major factor in Defense DP problems.

"No outside authority forced DOD to mismanage its projects over the last decade," the report said. "Nor did any outside agency insist that Norad use inadequate computers to perform its highly complex scientific calculations. Clearly, the responsibility for these decisions rests on the Air Force and the Joint Chiefs of Staff."

The committee further charged DOD with failing to accept GSA's offers of assistance "to revise [DOD's] cumbersome and time-consuming procurement policies."

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Product Managers See Functions Expanding

(Continued from Page 1)

the complete environment," he continued, noting that UCC is working on interfaces with other products, such as Informatics, Inc.'s Mark IV.

The data dictionary will continue to serve as the central source or directory from which software products derive their data definition, Ted Watson, product manager for TSI International's Data Catalogue 2, maintained. He said that a second direction for data dictionaries will be specific applications that are devel-

oped for the dictionaries to support other functions

Watson said that his firm's major future plan is to build in product extensibility so users can define their own dictionary environment and tailor the data dictionary for the job they want it to perform.

"The data dictionary will continue to be used very heavily as a DP tool

Product Spotlight

to model all of DP, as opposed to just data items," according to Ed Millsap, vice-president and group product manager for Applied Data Research, Inc.'s ADR Datadictionary. "The dictionary will model the entire DP organization rather than just data."

Millsap and Mike Ater, vice-president for sales for Software AG, pointed to the development of distributed

processing capabilities as a natural path for data dictionaries.

Another product in the works at ADR is an interactive development facility that will use the data dictionary heavily, Millsap continued. "All services and facilities will be modeled in the dictionary."

MSP, Inc. will be announcing a series of dictionary-driven products, the firm's president, David DaCosta, explained. He described a growing trend toward managing information across the organization through the

System	Software AG of North America, Inc. ADABAS DATA DICTIONARY	Applied Data Research, Inc. ADR DATADictionary	TSI International (Formerly Synergetics Corp.) DATA CATALOGUE 2	Cincom Systems, Inc. DATA CONTROL SYSTEM	IBM DB/DC DATA DICTIONARY
Characteristics					
Dictionary Entity Types	Data base, files, fields, programs, modules, reports, systems, user-defined entities supported.	Data base, area, file, record, key, field, element. Optional entities: program, system, module, job, step, report, person. User-defined entities supported.	User, system, task, module, report, form, external resource; data base type, record, group, data element, unknown.	Schema, file, physical element, logical element, system, program, report, user, source document, transaction.	System, program, job, module, data dictionary user, transaction, data base, segment, element, Program Control Block (PCB), Program Specification Block (PSB), Sysdef. Entities that allow users to customize dictionary: category, relationship type, attribute type.
Operating Systems	IBM MVS, OS/VS1, DOS, DOS/VSE.	All IBM operating systems.	All IBM OS operating systems.	All IBM OS operating systems. Terminal facilities provided by Environ/1.	IBM 370 series, 4300 to 3081. MVS VS1 (OS), DOS.
Source Language And Structural Description	An Adabas data base.	Written in assembler. Modular structure. On-line system made up of modular routines. Menu-oriented, menu-driven.	Written in Cobol. Modular construction. Uses 3 Bdam or Vsam files. Is implemented independently of any DBMS.	Written in Cobol and assembler. Consists of Total data base that has nine files. Modular in format.	DL/1 data base with logical relationships. Modular in format.
Input Formats	Preformatted screens.	Via screens (menus provided). Match capability also provided.	Free-form data definition language. Prompted data entry under CICS. Automatic convert facilities.	Preformatted terminal screens. Extract utilities.	Batch and interactive display forms facility.
Query Language/Reports	Adascript-1, Natural on-line query languages. 25 reports, including file descriptions, data base descriptions, listings of fields, user fields, user views. Using Natural, users can write own reports.	On-line query, retrieval system. Reports include detailed report for entities, field report, indexed report, index report, alias report, description report, relationship report, text report.	Free-form nonprocedural query language. Relational queries. Content queries. Count, list or show entries. For on-line or batch. Analytical reports for batch include relational report, hierarchy report, usage report, name analysis report, index of violations, index by any field name.	Interactive query language, 26 catalog queries supplied. Queries also can be defined, modified. Set of comprehensive batch reports available, 25 reports available. Reports have facility to extract subsets of information.	Customize reports through program access facility. Generic reports. Generic screen output.
Software Interfaces	Adabas only DBMS interface. CICS, Com-plete, Shadow II, Task Master and others.	On-line: runs under Datacom/DC, Roscoe, CICS. Supports Datacom/DB, DL/1 structures. Allows user to define any standard access method, such as Vsam. Integrates with ADR products, such as Librarian.	Generates Cobol, PL/I assembler, Mark IV file definitions. Generates IMS or DL/1, Adabas, Total DBMS definitions.	Total only DBMS actively supported. Provides facility to generate Total data base definitions; record description areas in Cobol. Also can generate Cobol procedural code.	DL/1, IMS-DB, CICS, IMS-DC.
Data Administration Features	All security, utilities of Adabas are provided.	All security aspects of Datacom/DB. Full restart/recovery; transaction back-end recovery.	Ability to monitor standards. Name analysis report (redundancy control). Relational report.	All facilities of system are password-protected. Password protection facilities on individual entity types that are critical. Task-level recovery.	---
User Exits Provided?	No	No	No	Yes	Sign on security via Racc (Resource Access Control Facility), user authorization by status.
Source Code Available?	No	No	No	No	Yes
Pricing Information	Included with Adabas DBMS, which is priced between \$99,000 and \$160,000.	\$26,000 (OS) \$22,500 (DOS)	\$12,500 to \$45,000	Basic component of Data Control System, interactive data dictionary is priced at \$29,500. Facility to generate program code, working storage and so forth costs \$10,000.	Yes
Estimated User Base	More than 900.	150	200	10 (enhanced version) 80 (former release).	\$806 (OS) \$319 (DOS).

for Their IBM-Compatible Data Dictionaries

use of common definitions of data that are contained in the data dictionary.

"As the market develops, the data base dictionary will be a solution for the data base manager, but not for the data resource manager," he said, noting a trend toward the dictionary driving other functions such as code generation, logical data base design, text-base administration and network-protocol management.

Jack Grady, product manager for Cullinane Database Systems, Inc.'s

Product Spotlight

IDMS IDD, said the next step in dictionaries might be the facility to build conceptual schema that would enable the data base designer to mirror the way the business operates.

He described a product idea tracking system that he developed for Cullinane by using IDMS IDD. "Within a day, I had an entire product idea tracking system on-line,"

Grady explained, noting that he defined his entity types as ideas, when originated, data on product, evaluation and motivation.

In addition to extended functions, the dictionary is useful in enforcing standards within a DP organization, Mike Dion, product marketing manager for Intel Corp.'s System 2000 IDD, said. "If someone leaves, you

know what he had in terms of programs because they are in the dictionary."

Dion said Intel plans to continue to drive new features and new processes for its data dictionary, such as its product Query Update by Example, which was released last year.

The real value of a data dictionary is as an application development, maintenance and system implementation tool, Larry DeBoever, product manager for Computer Corp. of America, maintained.

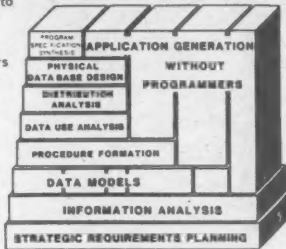
System Characteristics	MSP, Inc. DATAMANAGER	Computer Corp. of America DICTIONARY/240	Cullinane Database Systems, Inc. IDMS IDD	Intel Corp. SYSTEM 2000 IDD	University Computing Co. UCC TEN
Dictionary Entity Types	System, program module, file, group, item. User-defined syntax facilities.	Group, file, record, field, procedure. User-defined entities supported. DBA can add standard entity types, rename entity types, add and update path information for cross-referencing (path information not necessary for cross-referencing).	User, system, file, record, element, module, class, attribute, transaction, report. Task, destination, logical terminal, physical terminal, line, panel, screen, map. User-defined entities supported.	Application, work unit, programming, file, record, item, data base, work area, user, schema, work structure.	All 37 IMS entity types. Data base, data set groups, segments, fields. Format, message. Program specification block, transaction, logical terminal. (within Btam): physical terminal, lines, control units, stations, tools. (within Vtam): communications macro, type, physical terminal. Applications development facility control block: system ID, transaction ID, screen image.
Operating Systems	All IBM operating systems. On-line and batch.	All IBM OS operating systems.	All IBM mainframe operating systems, 4300 and up.	All current IBM mainframe operating systems.	Under IMS (OS) supports either CICS or IMS/DC.
Source Language And Structural Description	Written in assembler. Single program, fully re-entrant. Vsam or Bdam supported. Modular in Format.	Written in User Language (Model 204 data base language). Underlying data structure is single Model 204 inverted file. Relational data dictionary. Modular in Format.	Written in assembler. Is an IDMS data base. One file. Modular in format.	Dictionary is a System 2000 data base. Report writer provided. Assembler routine for special processes. Modular in format.	Written in 90% Cobol. Consists of 8 Idam data bases which store entities, entity attributes. No logical relationship physical forms. Modular in format.
Input Formats	CICS, TSO, ICCF, Roscoe, IMS/DC, Com-plete, Shadow II, CMS supported. Some formatted screens, HELP facilities, menus. Free-form input also supported.	Full-screen, menu-driven.	Free-form key word based. User-defined syntax feature available. Syntax converter. Generates syntax necessary to populate dictionary with elements from copy libraries. Pre-processors. Cobol, PL/I, Fortran, assembler precompilers capture information, provide program activity reports.	Form that can be filled in in batch or input on-line through terminal. Full-screen capability.	Message format screens. CICS screens. Free-form key word entry. Conversion facility. Cobol, PL/I, I/O areas. Batch: fixed format facility.
Query Language/ Reports	Command language for queries to screen and to output print are identical. English-language query language. Can package command screens and perform them (Release 4.0.0). Hundreds of reporting options.	Menu-based queries. Five standard reports include entity report, occurrence list report, cross-reference report, browsing report and inventory report.	On-line query using display verb. Option of on-line query also available. 70 standard reports: one for each entity type; synonym reports; file activity reports; summary report on node and entity type; key reports.	Quest query language. Catalog reports; impact and explosion reports, standard description reports, key word reports. (Each controlled by user-defined selection.)	Function within data dictionary allows for reporting of given entities. Report command. Can extract data on relationships, structures, text, key words. Most reports preformatted. No report writer feature at this time.
Software Interfaces	Supports Total, IMS/DL/I, Adabas, IDMS, System 2000. Supports Com-plete, CICS IMS/DC, Shadow II, Roscoe, TSO, CMS, ICCF. Supports Assembler, PL/I, Cobol. Supports Mark IV, Librarian, Easytrieve.	Model 204 is only DBMS interface. Interfaces with TP/204, CICS, TSO, Intercomm.	IDMS is the only DBMS interface. Interface with four languages: Cobol, PL/I, Fortran, assembler. Interface with IDMS/IDD at Sysgen. TP Monitors: CICS, Task Master, Intercomm, Westi, Shadow II, TSO, CMS, IDMS/DC.	System 2000 as DBMS. Document and control through Vsam, sequential file.	IMS is the only DBMS interface (run as application of IMS). Interface with IMS Map facility, Application Development Facility. Interface with UCC Six — partitioned data set. Application Control Block generation.
Data Administration Features	Audit security. Status facility. User interface which provides access/call, post mail and user exit facility. User-defined syntax.	Three levels of security.	Security features inherent with IDD components. Can define users with update privileges, IDD access. All components of DBMS security defined at IDD, to entity occurrence level.	All of the System 2000 security features. Automatic recovery, save/restore clause built in. Dictionary controlled by System 2000 item-level security.	For backup/recovery uses IMS backups — image dump, restore facilities. Password type security. Password checker module — user can put security features into program.
User Exits Provided?	Yes	No	No	Yes	Yes
Source Code Available?	No	Yes	No	Yes	Yes
Pricing Information	OS: \$13,500 for nucleus, \$4,300 for each module. DOS: \$8,100 for nucleus, \$2,580 for each module.	\$20,000	\$30,000	\$15,000 (MVS). \$10,000 (DOS/VS (E), CMS; Requires System 2000.	\$24,000 (includes maintenance for one year; thereafter, \$2,800/year). \$1,035/mo/36 mo (includes maintenance).
Estimated User Base	Over 600	35	Over 700	30	Over 300

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Analysts Cite Future Trends In Data Dictionaries' Scope

By Lois Paul
 CW Staff

Extensibility, integrated functions and standardization are the trends that several analysts cited when asked about the future of data dictionaries.

Henry C. Lefkovits, a systems consultant with the Alpha Omega Group, sees three potential trends in data dictionaries: they will become more integrated with data base management systems (DBMS) and take more of an active role in control, they will interface more to other software systems and they will become standardized.

The scope of the data dictionary originally was very limited, Lefkovits said. Current products now include the ability to use the contents of the data dictionary to control data entry.

Data dictionaries are being used more in business systems planning and modeling and in data base design efforts, he continued.

Non-DBMS Application

A non-DBMS application for a data dictionary that he described involves a company that occasionally puts together a corporate glossary. "This time they will do it on the dictionary," he said. The ability to customize the dictionary so that it can be useful in this environment is the key in this type of application, he explained.

Bernard Plagman of The Plagman Group agreed with the view that data dictionaries are becoming more and more useful for end users.

Plagman predicted that the data dictionary's functions will be expanded through integration into the system development life cycle, including enterprise analysis, which is the first step in the planning process. "The dictionary will be an integral part of accepting and generating deliverables for the development life cycle," Plagman continued. "That is besides just being a documenting tool for the DBMS."

Within five years, data dictionaries will be integrated with project control systems, Plagman predicted, generating JCL and job streams.

Consultant Steve Robinson said data dictionaries currently are not acting as the driver or control mechanism to data base packages, although this is their intended future use. He maintained that the idea of an integrated data dictionary is a limited facility at this time.

"Data dictionaries are taking on a new role vis-a-vis the data base package. They are becoming the standard front-end to a data base package," he said. "Right now they are more of an add-on than designed to function that way," he explained. With the onset of distributed data processing, there will be a pressing need for a dictionary that functions as a central resource for data, and this will have to be a sophisticated package, Robinson continued.

"It requires a very sophisticated data dictionary. Not what is there today."

Plagman noted the move toward standardization of data dictionaries.

There are two standards bodies currently working on this. One is the American National Standards Institute's X3H4 Committee, which is working on development of a voluntary standard.

The National Bureau of Standards is working on development of what

Product Spotlight

will be a mandatory standard for data dictionaries used within federal government installations.

It is likely that by the end of the 1980s there will be a fairly well-accepted data definition language, Plagman said. Perhaps in seven to eight years, 70% to 80% of all data descriptions will be written in this data definition language, he added. This will facilitate migration of files, training and other factors.

The standards committees will essentially determine entity, relationship and attribute types that a data dictionary should include, as well as features such as extensibility, maintenance and reporting, Lefkovits said.

"Probably most of the existing products will find, within a period of time, some way to fit the product into this effort," Lefkovits maintained.

Two Kinds Of Dictionaries

By Lois Paul
 CW Staff

There are two kinds of data dictionaries. One is offered by a data base management system (DBMS) vendor in conjunction with its particular package. The other is independent of a DBMS.

Of the IBM-compatible data dictionaries included in this spotlight, only two are in the latter category: TSI International's Data Catalogue 2 and MSP, Inc.'s Datamanager. The rest are tied to a particular DBMS.

Consultant Steve Robinson predicted that developers of independent data dictionary packages will have a hard time competing with products that are tied into vendors' DBMS packages because the latter can offer more facilities.

"I don't think, in the long run, that they can keep up and can provide facilities. In the long run they will be limited," he said.

Bernard Plagman of The Plagman Group suggested that most small and medium-size shops tend to remain with DBMS vendors because they have a strong commitment to their DBMS.

The larger shops often have more than one DBMS and are building a network, he continued.

Therefore, they require flexibility and need a data dictionary that can interface and work with several DBMS packages. This points to the independents.

Numerous Fatal Accidents Cited

Patco Blasts FAA Claims of Improved Air Safety

By Jake Kirchner

CW Washington Bureau

WASHINGTON, D.C. — The Professional Air Traffic Controllers Organization (Patco) last week strongly disputed recent government claims that air safety and air traffic control (ATC) equipment reliability have improved since 11,500 controllers were fired last summer.

In testimony before a House Transportation Subcommittee Wednesday, Patco Executive Vice-President Domenic V. Torchia contended that there have been numerous fatal and nonfatal aircraft accidents at least partly attributable to the cutbacks in air traffic control operations following the Patco strike.

He also charged the Federal Aviation Administration (FAA) with not reporting accurately the extent of ATC systems problems. While declining to accuse the FAA of a cover-up, Torchia said that Patco discussions with still-working controllers indicate "systems errors [reports] are not being processed" by the agency.

During this testimony, Torchia questioned the reliability of a recent Flight Safety Foundation report, which said that there have been fewer failures of the computer-based ATC equipment since the Aug. 3, 1981 strike [CW, March 1].

The Patco official noted preceeding testimony from FAA administrator J. Lynn Helms that the foundation was paid \$186,000 by the FAA for the study. Torchia also claimed that the foundation relies heavily on ex-FAA officials for its staff.

In what amounted to a battle of statistics between FAA officials and Patco representatives, the subcommittee hearing produced arguments from Torchia that despite the sharp cutback in air traffic since last summer "there has been a marked decrease in the level of safety."

"Because of reduced systems capacity and lack of previously available

services, more flights, especially corporate and general aviation, are being flown without the benefit of air traffic control service," Torchia said.

"How many accidents already have occurred because ATC service was not available, yet flight was attempted or continued anyway?" he asked.

He pointed to several recent accidents, including an Aug. 17 mid-air collision over San Jose, Calif., and a Sept. 23 helicopter and light aircraft collision over New Jersey, which, according to Torchia, were directly attributable to controller error. Other accidents, he said, have occurred at airports whose towers were closed by the FAA for lack of controller per-

sonnel. He accused the FAA of conducting a vigorous "public relations effort" following such accidents to defend reduced ATC operations.

He also noted the recent crash here of a Boeing 737 that claimed 78 lives and the testimony before the board of inquiry, which suggested alleged air traffic controller failure to maintain proper separation between the 737 and an incoming airplane may have contributed to the accident.

Adding to his list of criticism of current ATC operations, Torchia said "the operation of critical systems meant to insure public safety, funded by the government, appears to be in jeopardy due to financial restraints."

As an example, he said an Air California Boeing 737 last month hit power lines by descending too low near Ontario, Calif. The instrument landing system was not working because the "FAA refused to authorize overtime to a technician who would have ... put the approach back into use." He also suggested that airlines, suffering declining profits because of the cutbacks in air travel necessitated by the firing of the Patco members, may be lowering their maintenance standards to save money.

Torchia further stated air traffic controllers' morale problems stemming from overwork may be more serious than the FAA admits.

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7 8

FCC Authorizes Service to UK

WASHINGTON, D.C. — A new data communications service to the UK reportedly priced substantially below existing offerings has been authorized by the Federal Communications Commission.

Developed by GTE Telenet Communications Corp. in Vienna, Va., the service will cost an average of \$22/hour, a company spokesman said. Circuit-switched services between the U.S. and the UK typically cost \$110/hour to \$240/hour, he added, and are less reliable. The \$22/hour figure is based on a \$10 time charge and a \$12 usage charge — enough to cover transmission of 64,000 bit/hour. Higher volumes cost more, the spokesman said.

The new service will provide end-to-end transmission speeds of 110- to 9,600 bit/sec and will interface with "a wide variety of asynchronous and synchronous terminals," a GTE Telenet spokesman reported.

AT&T Plans to Invest \$433 Million in ACS

WASHINGTON, D.C. — AT&T plans to invest \$511 million between June 1 and the end of 1985 in development of enhanced on-line services, the company told the Federal Communications Commission (FCC) last week. Of this total, \$433 million is earmarked for Advanced Communications Service (ACS), the "smart network" offering Bell unveiled last November; the rest, \$78 million, will go into other enhanced services.

None of the other services now being explored would duplicate "the features or functions" of ACS, the

phone company spokesman added, but no further service details were provided.

Last week's filing was a supplement to the capitalization plan AT&T submitted to the FCC last November when it announced ACS. The plan shows how the company intends to finance XYZ, Inc., the separate subsidiary that will operate ACS under the terms of the Second Computer Inquiry Decision.

Prospective competitors of ACS have raised a number of objections concerning the capitalization plan. The latest ones were submitted to the FCC shortly before AT&T's supplemental filing.

One concern is that the phone company is using revenues earned from its monopoly communications services to pay for development of ACS.

Another concern is that AT&T will gain a competitive advantage by requiring ACS customers to use a terminal interface obtainable only from the phone company.

AT&T now requires users of its Dataphone Digital Service (DDS) to use this "channel service unit" interface, an Independent Data Communications Manufacturers Association spokesman told the FCC, and ACS will be used "in conjunction with" DDS. "By expanding the use of DDS facilities... ACS will exacerbate the impact of the discriminatory DDS interconnection restrictions," a spokesman for the Independent Data Communications Manufacturers Association added.

Datacomm Briefs

Bill Introduced to Delay AT&T Divestiture Plan

WASHINGTON, D.C. — The divestiture plan worked out by AT&T and the Department of Justice last January would be delayed two years under a bill introduced recently by Rep. Don Bailey (D-Pa.). At the end of those two years, AT&T could apply for divestiture through the Federal Communications Commission. The commission would then have 60 days to act on the application.

As it is drafted at present, the AT&T/Department of Justice agreement will raise local-exchange rates, according to Bailey. The agreement will also cause jurisdictional problems between state regulators and federal regulators, according to Bailey.

In addition to this, the agreement leaves many questions unanswered — questions regarding "what specific functions AT&T would be divesting and the price paid by the company for those functions," Bailey claimed.

Local-exchange rates have been kept low by permitting higher rates for other services, according to Bailey.

"To remove the local rate base from the overall... system would be to extremely disadvantage consumers and create a windfall for AT&T," Bailey said.

GTE Telenet Certifies IBM NCP, NIA Aids

VIENNA, Va. — GTE Telenet Communications Corp. has certified two interfaces that increase the company's ability to serve users of IBM's Systems Network Architecture (SNA).

IBM's X.25 NCP Packet Switching Interface Software, one of the products certified, goes into a Model 3705 communications controller and allows larger mainframes — such as 370s and 30 series — to communicate with a packet-switched network.

The other certified product is a Network Interface Adapter (NIA). It provides protocol conversion for SNA terminals, according to a company spokesman. The NIA also serves as a packet network interface for certain IBM computers — such as the 8100, System/32 and System/38 — which do not employ 3705 controllers.

Certification of the two interfaces by GTE Telenet means that users of all these IBM devices can now interconnect with GTE's transmission facilities, which serve 250 U.S. cities directly. "We are the first public packet-switched network to offer this capability," a company spokesman said.

Earlier, GTE Telenet certified an IBM Series/1 packet network interface. The spokesman, when asked what was next, said it is likely to be certification of a packet network interface for Ascii-type terminals. In June, IBM is supposed to announce an upgrade of the NCP packet-switching interface software that will contain this capability.

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EIS Conference Set for May 6-8

GREENWICH, Conn. — A conference on issues affecting information-systems users and suppliers will be sponsored by Enterprise Information Systems, Inc. (EIS) at the Innisbrook Resort, Tampa, Fla., May 6-8.

The conference was designed for executives, corporate planners and management decision makers and will focus on changes and developments in information systems. The conference will feature user presentations along with workshops and panel discussions.

Topics to be included are: "Baby Bell" and communications alternatives of the 1980s, IBM's changing systems architecture, the impact of plug-compatibles, information-systems security and auditability, distributed/satellite processing and Japan's fifth-generation computers and supercomputers.

Speakers will include Shouhei Kurita, chief coordinator for the Fifth Generation Computer Technical Research Working Group of Japan; David L. Anderson, director of corporate planning and business development for Amdahl Corp.; Hal B. Becker, consultant and author on systems security and networking; and David L. Britton, founder and president of Britton-Lee, Inc.

Attendance at the conference costs \$750, which must be received by April 5. Enterprise Information Systems is located at P.O. Box 1154, Greenwich, Conn. 06830.

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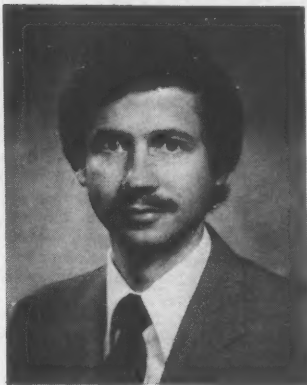
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Managers on the Move



Paul E. Kuntz

PAUL E. KUNTZ has been named manager of EDP techniques and support in the DP and Communications Services Department at Firestone Tire & Rubber Co., Akron, Ohio.

He joined Firestone in 1963 as a programmer trainee in the Systems and Programming Department where he became a project leader. In 1974, he was appointed section manager of the department, where he worked until his present assignment.

Kuntz is a graduate of Capital University in Columbus, Ohio, where he earned a B.S. in mathematics.

LORENA F. LEMONS has rejoined the management consulting firm of Booz, Allen & Hamilton, Inc., as a principal technical associate. In her current position, she is assigned to the Management & Information Systems Division, focusing on the transportation and health-care industries. In addition, Lemons specializes in industrywide hardware/software evaluations for computer-based activities.

Prior to rejoining the company, Lemons spent two years with the U.S. Railway Association. During that time, she worked with the Conrail Information Systems Department to review the effectiveness of computer-based operations and control systems used on the railroad, including financial management processes.

She founded the Alliance of Rail Citizens for Progress in 1971 to further expand the state transportation system in Maryland in conjunction with the National Association of Railroad Passengers. She has been a member of the Association of Computing Machinery since 1964 and belongs to IBM's Electronic Computers in Health Organizations' users' group and the American Council of Railroad Women.

JOHN C. CLEGG has joined The Standard Products Co. of Cleveland as director of information resources. He is responsible for the company headquarters' computer center, distributed data processing among multipoint operations, microcommunications network, microcomputer technology, information systems, office automation and robotics.

Prior to his joining the company, Clegg's experience in information systems included over 20 years in various management positions with

Figgie International, Dart-Kraft and Sperry Univac. He holds a B.A. in mathematics from Manhattan College.

JOSEPH O. DUHAMEL has been promoted to executive vice-president of the Chicago Board Options Exchange (CBOE). He is in charge of all computer systems operations for the exchange.

Duhamel has 25-years experience in computer operations and systems development. He has served with CBOE since 1979, first as a vice-president and most recently as senior vice-president in charge of the exchange's Computer Systems Division. Prior to joining CBOE, he served as director of business plan-

ning with the Financial Services Division of General Telephone & Electronics, Mount Laurel, N.J.

He is a graduate of St. Mary's University in Baltimore, Md.

ERNEST G. MIKULLA has been promoted to vice-president/director of corporate data processing at Ketchum Communications, Inc., Pittsburgh, Pa., which specializes in marketing and business communications.

He joined the agency as a programmer in 1964 and subsequently worked with three generations of computer hardware for the company. He has directed or aided in the development of most of the company's present computer systems.



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Reagan Administration Rejects Representation At Classification Hearings

By Jake Kirchner

CW Washington Bureau

WASHINGTON, D.C. — The Reagan administration has refused to send representatives to congressional hearings on the White House's proposed new guidelines for classifying government information.

The National Security Council and the Justice Department had been invited to appear before the House Government Information and Individual Rights Subcommittee to address the classification plan. But both refused, arguing that the draft Executive Order on National Security Information was still in the deliberative process.

The Reagan executive order would update regulations promulgated during the Carter presidency. Several House committee chairmen have expressed concern that the order would lead to increased government secrecy and possibly allow classification of private-sector data, particularly in science and technology [CW, Feb. 22, March 8].

"The draft order may expand the ability of the government to classify private technology," Rep. Glenn English (D-Okla.), chairman of the House information subcommittee, said March 9 in announcing the administration's refusal to testify before his panel the next day.

"Whether the government should be allowed to interfere with free enterprise by classifying basic scientific research or private technology that is not directly related to military weapons or similar national security matters is a question that is certainly worthy of public debate," English said.

"It appears no one in this administration is willing to defend the draft order in public," the subcommittee chairman commented.

The Justice Department, however,

AT&T ESS Halts N.Y. Service

NEW YORK — AT&T's largest long-distance telephone electronic switching system (ESS) failed sporadically for nearly an hour and a half here last week, interrupting New York City's national and international telephone system.

According to AT&T spokesman Wayne Dubois, the company's No. 4 ESS in lower Manhattan went down three separate times between 9:15 p.m. and 10:40 p.m. last Monday.

The problem with the No. 4 ESS, AT&T's principal switching system for long-distance telephone traffic, caused local 212 area-code difficulties and affected some international traffic, primarily to Europe, Africa and the Middle East, Dubois said.

The spokesman added that AT&T did not know the specific nature of the problem, but was investigating it. He also said that there were no dedicated line circuits hooked up to the No. 4 ESS and no data transmission problems were reported.

told the subcommittee it would be "inappropriate" to send a witness to the hearing. "The process of revising the executive order had not been completed and the matter has not yet been presented to the President for decision," Assistant Attorney General Robert A. McConnell said in a letter responding to the subcommittee's invitation.

Similarly, the National Security Council told English it would not appear "while the internal deliberative process [is] underway." Both agencies said they would continue to discuss the matter with the subcommittee informally and promised to answer any questions it might have about the draft order.

Other Administrations

English remarked that the refusal to testify indicated "the Reagan administration is following in the footsteps of the Nixon administration, which, in 1973, declined to participate in public hearings on classifications matters. The Carter deliberations, in contrast, were much more open, English said. Following the March 10 hearing, at which public witnesses expressed misgivings about the draft order, the subcommittee sent a letter to President Reagan renewing the invitation to testify on the classification proposal.

"It is difficult to make sound judgments when only one side of an issue is represented at a hearing," the letter said. Signed by English and Rep. Thomas N. Kindness (R-Ohio), ranking minority member of the subcommittee, the letter asked Reagan not to act on the executive order "without informing the Congress and the public of the scope of the problems and the nature of the solutions being proposed."

During the March 10 hearing English charged the administration's refusal to testify indicated that the White House is "not anxious to let Congress and the public know what it is doing in this area." Rep. Ted Weiss (D-N.Y.) accused the administration of "arrogance" and said its actions were "very disturbing."

It is unclear what the subcommittee can do in the face of the administration's unwillingness to testify. The comment period for the executive order expired March 5, and it could be issued at any time, without congressional approval. English suggested that Congress may be able to pass legislation to "curb some of the more extreme examples" of any new secrecy scheme.

The danger of the proposal, according to witnesses at the hearing, is not necessarily what it says, but how it may be interpreted once issued. They referred to the alleged vagueness of the draft, which prompted the subcommittee hearing.

George Washington University law Prof. Mary M. Cheh said that the order, as presently drafted, could cover "almost any information ... enabling the government to control privately generated information under a broad conception of control."

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Federal Program Aids States To Uncover Medicaid Fraud

By Jim Bartimo
CW Staff

WASHINGTON, D.C. — The federal government is making available to state governments a software package that has already retrieved about \$687,000 in misappropriated Medicaid funds, according to a report released by the U.S. Department of Health and Human Services.

Once attributed to "computer error," the missing funds are now recognized as overcharges by physicians who use a variety of methods to manipulate the Medicaid system, the report said. Most of these methods center around the physician's identification number used for billing Medicaid when services are rendered to a recipient.

For example, a physician obtains an ID number for his group practice and another number for his private practice. By billing the same service under both numbers, he receives double payment for one service, the report said. The same double billing method can be used when a doctor has an ID number as a specialist and as a general practitioner.

Sometimes two physicians will bill for services rendered by just one, again producing another double charge, the report said.

Mathematical Formula

The software, known as the screen, is a mathematical statistic package, according to James Foster, director of advanced audit techniques in the Inspector General's Office of Health and Human Services. The screen contains a mathematical formula that can be tailored by the states to fit their varying Medicaid needs, he said.

Foster's department is in charge of developing computer systems that are too complex or too time-consuming for other agencies to develop on their own, he said. "We're making this available to the states, and they can take advantage of it if they want

to," Foster said. "All we ask is that they give us some of the results so we can test the system."

So far, only two states have used the screen in an effort to test it before making it available to the rest of the country. The states remain unnamed, in accordance with agency policy. Foster said, but the first state recovered \$200,000, and the second recovered \$100,000 from the physicians who overcharged. According to the report, about \$7.5 million could be recovered if this success is duplicated in all 50 states.

Two Screens

The screen is designed in two parts, the report said. The first seeks physicians who show repetitive billing reported in a short period of time; the second screen identifies physicians who charge for higher priced medical services than are allowable.

An example of this is a physician charging for two "initial office visits" in one year instead of charging the second visit as a "follow-up." First visits are more expensive than follow-ups, so the doctor is cheating the system, the report said.

In one recent case, the screen found a physician who did not comply with the "initial office visit" limitation and overcharged the system by about \$5,000 over one year, the report said.

This second application of the screen uncovered \$457,000 in the two states, \$387,000 of which has been collected.

"We've found that the states are more than willing to participate in something like this as long as they're a 50-50 partner," Foster said. Friction develops between state and federal governments when one tries to outshine the other, he added.

Now that the screen is available to the entire country, it will be expanded to check for the same types of overcharging in the Medicare system and in the Veterans Administration, the report said.

DBMS Symposia Planned

LYNNFIELD, Mass. — The National Data Base Management Systems (DBMS) Symposium will be offered three times in 1982 by Digital Consulting Associates, Inc. The dates are April 26-29 in Washington, D.C.; May 17-20 in Chicago; and June 21-24 in Los Angeles.

The symposium will feature a combination of classroom and conference-style activities, focusing on how the data base fits into effective data management with user-oriented

query languages and application generators. The conference section of the program will include 34 individual presentations by vendors on the major DBMS packages available.

Conference registration is \$595 for all four days and \$295 for the seminar day only (first day), which includes lunches and all materials. Group discounts and further details are available from Digital Consulting, 5 Kimberly Terrace, Lynnfield, Mass. 01940.

Meet to Cover Information Policy

WASHINGTON, D.C. — "Future Directions in Information Policy," a conference sponsored by the National Telecommunications and Information Administration of the U.S. Department of Commerce, will be held here May 24-25.

The purpose of the conference is to identify information policy issues facing the nation during the 1980s and 1990s. The conference will provide a forum for private industry to

identify domestic and international policy issues and to identify those that are better left to the private sector and those that will require government involvement. There is no registration fee.

Further information can be obtained from the U.S. Department of Commerce, National Telecommunications and Information Administration, 14th St. and Pennsylvania Ave., N.W., Washington, D.C. 20230.

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System Stretches Long Arm Of North Country Law

DULUTH, Minn. — Pursuing criminals will become easier for Minnesota police because of a computer system being installed at police departments throughout the state.

Based on a police operations support software package called Posse from Maysys Corp., the system runs on Texas Instruments, Inc. 990 hardware provided by the Minneapolis-based Tele-terminal, Inc.

Ten police departments had terminals installed within 180 days, according to a Maysys spokesman. Those departments are now in the process of storing files, crime descriptions and criminal histories of suspects. Once completed, police will be able to call up information in a matter of minutes rather than sort through a manual filing system.

'Shakedown Period'

The Duluth Police Department, fully operational since the first of this year, is "in kind of a shakedown period," according to Walt Peterson, inspector for the Services Division.

The system is rated as excellent so far by Peterson. Although users did experience some problems when the system was first installed, "it's settled down," he added.

Some benefits the system will provide include accessing state information, automatic file feeds, easier access to file information and "a big savings in time," Peterson said.

The move toward computerizing file systems began in the late '70s, Steve Patchett, operations supervisor for the State Bureau of Criminal Apprehension, said.

Move to Computerization

The state purchased terminals in 1975, Patchett said, and began looking for local applications. The idea was to provide local users with more comprehensive functions, he noted.

Users have access to a statistical file, lost-and-found file, arrest file, juvenile name file and personnel module for background on employees, Patchett explained.

Police officers will now be able to compare details on a crime more easily, Patchett said, to see if a pattern is developing.

"Obviously police departments have done a lot of this kind of information [processing] by hand," he observed.

The state did not opt for a shared data base. "There were too many problems on a privacy basis," he explained. "State laws govern some of these things."

A police officer who needs information from another department can request the data, he noted.

When additional funding becomes available, the system may also be utilized by state prison officials to facilitate cell assignment, moving prisoners and maintaining medical records.

IIIC Opens June 1 in Quebec City

TORONTO, Ont. — An International Information Industry Conference (IIIC) to explore significant international issues affecting both users and suppliers of information

processing technology will be held June 1-3 in Quebec City, Que.

Hosted by the Canadian Business Equipment Manufacturers Association (Cbema), the conference will include topics on trade regulations, bilateral arrangements, social responsibilities of international trade, informatics, effects of trans-border data flows, protection of individual privacy and formation of national and international policies to address the increasing use of advanced information handling technology by industrialized and developing countries.

The conference chairman is Grant G. Murray, vice-president, general counsel and secretary of IBM Canada, Ltd., and immediate past president of Cbema.

Scheduled Sessions

Scheduled discussion sessions include International Trade, chaired by Jacques Maisonneuve, senior vice-president, IBM Corp., U.S.; Standards and Ergonomics, chaired by Dr. M. Pedretti, general manager and managing director, Olivetti Computers, Italy; Informatics, chaired by Robert M. Price, president and chief operating officer, Control Data Corp., U.S.; and Telecommunications, chaired by Dr. P.G. Stern, executive vice-president for engineering and manufacturing, Burroughs Corp., U.S.

Registration costs \$475 (U.S.) per person. Hotel accommodations are not included. Registration should be made with Cbema, Suite 212, Yorkdale Place, 1 Yorkdale Road, Toronto, Ontario, Canada, M6A 3A1.

QAI Meets Set For April 20-23

ORLANDO, Fla. — Two seminars sponsored by the Quality Assurance Institute (QAI) will be held in Washington, D.C. April 20-21 and April 22-23.

The first seminar, "Building Quality Into Application Systems," will analyze principals and practices for applications developments. Topics to be discussed include quality planning, minimizing costs of quality, adhering to quality objectives and independent quality assurance.

The second seminar, "Quality Assurance Systems Development Reviews," will examine 10 major quality-assurance issues, 50 concerns that require quality-assurance investigation, 400 questions to answer throughout about the major phases of the systems development life cycle and 400 tests that the quality-assurance analysts can conduct to verify the quality of the system under development.

There is a membership fee to attend the seminars. For current QAI members the cost is \$295/seminar. For nonmembers \$375/seminar.

Further information on the seminars can be obtained from Quality Assurance Institute, 9222 Bay Point Drive, Orlando, Florida 32811.

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Achieves Rapid Conversion

Insurance Firm Bets on In-House Mini, Wins

NEWPORT BEACH, Calif. — A three-month conversion from a service bureau to an in-house computer is saving Commercial Bankers Life Insurance Co. here about \$16,000/mo in processing costs.

A medium-size insurance company with \$31 million in assets and \$387 million in policy sales in 1981, Commercial Bankers sells primarily term insurance to individuals through its

800 general agents scattered throughout the western U.S.

The rapid conversion was possible because of the choice to go with Hewlett-Packard Co.'s HP 3000 small business computer, according to Gary Galan, vice-president of data processing for Commercial Bankers.

The switch to HP saved the firm \$3,000 immediately, Galan said.

"I think we are one of the few in-

urance companies," Galan added, "using a small business computer rather than a large mainframe to meet our entire data processing needs."

Commercial Bankers formerly used a remote job entry station communicating with a mainframe at a local service bureau, which only provided the insurance company with computer time.

sidered critical because the company wanted to upgrade its software. A DBMS would allow a number of functions, such as word processing, to be consolidated into the company's life insurance processing system, a spokesman explained.

An HP 3000 with 1M byte of memory was installed along with eight terminals in June 1980. The company now has more than 20 HP terminals installed in-house and two additional remote terminals tied to the computer.

The configuration also includes an HP Model 2619 printer, four HP 120M-byte Model 7925 disk drives and an HP 7970E tape drive, used primarily for backup and creating microfiche tapes.

The system runs under MPE III operating software, while HP's Image software provides the data base management required by Commercial Bankers.

Five Data Bases

Five major data bases compose the system: a policy master file containing 25,000 policies with up to 300 items of information per policy, a plan description file with over 100 different plans describing all product information, an agent file for the firm's 800 agents and brokers, a commission rate file to keep track of commission contracts and a plan anniversary file that provides information for automatic changes in face and premium amounts at anniversary processing.

When a policy application is received, a clerk assigns a policy number and enters it on-line. Minimal statistical information is entered into a skeleton policy format and the policy is sent to underwriting. The underwriter verifies the policy, which then is issued and billed, a spokesman said.

The company developed application software, called Sybil, specifically to meet the requirements of the life insurance industry, he said. The 225 programs that form the Sybil system — including new accounts, billing and a number of special reports — made up the bulk of the conversion process.

Cobol and Assembler

"Ninety-five percent of the programs in Sybil were written in Cobol and 5% in assembler," Galan said. "It took us approximately three months to convert the programs to the HP 3000. This was done by writing a program to convert IBM Cobol source code to HP Cobol source," he explained.

With weekly updates, the computer can automatically issue a draft to banks for preauthorized checking withdrawals just as it generates billing notices to those customers who do not choose automatic transfer. The system also allows the firm to bill the government and individual companies that contribute to employees' insurance.

Commercial Bankers has also integrated its word processing system into the computer, using WP/3000 software supplied by an independent software house.

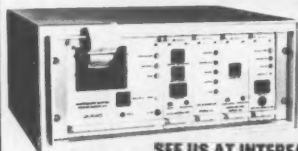
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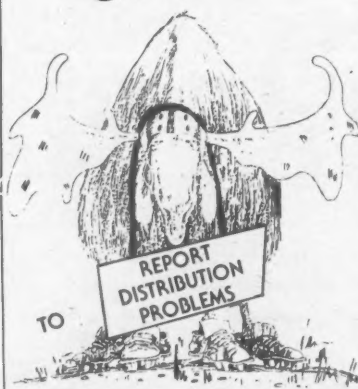


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CAD System Keeps Ship Builders on Course

ANTWERP, Belgium — While certain enthusiasts have described boats as holes in the water into which one pours money, a ship-building firm here takes its job more seriously. It recently implemented what some term the most sophisticated computer-aided design (CAD) system used in the boat-building industry.

The 108-year-old Cockerill Yards, located in the Antwerp suburb of Hobeken, recently installed a Sperry Univac 1100/10 processor to automate the design process. Currently the processor performs the calculations, produces scale drawings and stores data for reuse, according to Roland Doclo, the firm's computer manager.

In addition, the computer system has allowed the firm to speed up the process of nesting parts in plates by a factor of 10. This, Doclo said, limits steel wastage.

Another advantage of the system is that detailed engineering designs can be produced faster, while steel orders can be placed up to six weeks faster than before. The system also allows the firm to estimate more efficiently its steel requirements. Doclo said that the firm is now saving about 500 tons of steel/year.

Based on Foran

The CAD project started in 1978 when the Cockerill Hobeken facility began looking at design systems in use at other ship-building yards. A package called Foran, installed at Sener — a large Spanish engineering company — was used as the basis of the system, Doclo said.

In January 1980, Cockerill installed its 1100/10. With the Foran package, the system starts producing output as soon as the preliminary hull cross-section drawings have been produced. The package then utilizes the blueprints to produce a mathematical description of the hull. These mathematical coordinates can be used to print detailed drawings on a graph plotter and to calculate stress points. With the system, Doclo said, the initial design process takes several hours, as compared to about six weeks with manual methods.

The data produced in the initial design phase can also be used to estimate how much steel is necessary to build the entire ship. This allows Cockerill to submit steel orders much earlier. Doclo said this estimation process is accurate within 1% of the steel required to build the ship.

This information is also

used to generate documentation for a classification society. All ships must be built according to the structural and safety requirements of a classification society, such as Lloyds of London, Doclo explained.

In addition to the Foran program, Cockerill uses two special software packages, Nastran and Gifts, which are supplied by Univac, Doclo said.

Nastran is a finite-element calculation program used to access the stress factors applying to various parts of the ship's design, Doclo said.

Gifts enables designers to construct drawings on a display terminal showing the structures in question and the forces operating on them. From these drawings, the data necessary for the initial design specifications is automatically extracted.

Cockerill enhanced the Foran package by extending the use of its output to the next two stages of ship construction, Doclo added. The first stage is the detailed engineering process where the ship is split into buildable sections. In Cockerill's case, crane limitations dictate a buildable section to be 400 tons.

The output data from the first stage acts as the input

for the second stage, namely the production of nested plates, Doclo said.

In the future, Cockerill plans to expand the system to a larger Univac 1100/60 processor. This expansion will give the ship designers the capability to have drawings and information when they need it, as opposed to having to sift through various levels of drawings, Doclo said.

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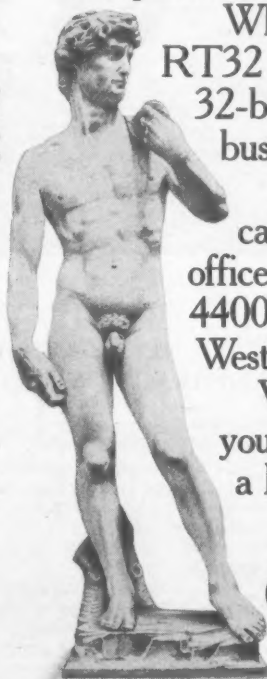
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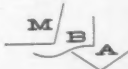


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MIS Modeling Method Prescribed by Consultant

By Brad Schultz

CW New York Bureau

SAN FRANCISCO — A method for modeling an organization's management information systems (MIS) functions so MIS managers can better plan and understand what they manage was described by a consultant here recently at the Computerweek conference.

Barry A. Stevens, principal consultant at Performance Management Associates, Inc. in Scottsdale, Ariz., noted that the model his company has applied to about 10 companies is assembled through interviews and other data gathering techniques over a period of four to six weeks.

When automated, the model can lead to significant savings in time required for planning and budgeting MIS, Stevens asserted, and the model can bring to light the various alternatives available to the MIS manager trying to meet a set of objectives.

Work Centers

In building the model, a user would identify the basic MIS "work centers," Stevens told a Computerweek session. These centers might include technical support, including functions such as systems generation and planning for equipment upgrades; development, including feasibility studies for prospective implementations as well as design, coding and testing of systems; operations, including the actual running of programs; CPU activities; and data storage functions.

Stevens called the functions associated with each work center "work units." The technical support, development and operations work centers have minibudgets covering salaries, benefits and travel expenditures, he noted, while the CPU and storage work centers have minibudgets covering rental, utilities consumption and the operating costs of facilities, he said.

The Performance Management Associates model also features a work-plan, citing what MIS is supposed to deliver to end users. Finally, the model entails definition of application units, which are a measurement of how many work units are required to render a certain application.

Variety of Measurements

For example, through interviews with MIS personnel, the following measurements may be derived for a particular application software package: two of every 137 production jobs require 0.05 hours of operator problem solving, a change of job forms takes 0.00032 hours, each job takes 0.01938 hours of CPU time and scheduling of execution takes 0.02 hours.

Users may compute such figures manually, but Performance Management Associates offers Costanalyzer, a software package that performs the computation automatically, Stevens said.

When all pertinent application unit relationships are defined, the work-plan is set, work centers and work units are identified and minibudgets are established, the MIS department can tinker with the model to uncover ways of reducing cost while continuing to meet objectives, he declared.

Thus, to learn whether objectives could still be met if certain work units are curtailed to some degree, the MIS professional can use the model to simulate what that curtailment would really do.

If the model indicates MIS objectives could not be met, given such changes, slightly different changes could be proposed and another simulation could be run to see whether objectives would be met in that case, Stevens explained. After a few iterations of this procedure, an acceptable strategy for MIS implementations would presumably be evident.

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Touts Ethernet

Information Director: Local-Area Net Key to DP

By Robert Batt

CW West Coast Bureau

SAN FRANCISCO — The local-area network is the key component in a distributed processing office automation environment and Xerox Corp.'s Ethernet is the most appropriate local-area network for future development.

That was the message Robert Evans, director of corporate information systems for The El Paso Co. in Houston, Texas, delivered to attendees at the Computerweek conference held here recently.

Nevertheless, he acknowledged that the slow emergence of Ethernet products into the marketplace had caused problems for his company, although he absolved the product developers from blame.

"Basically our expectations got way ahead of reality and this cost us credibility with our organization," Evans said.

Coordinated Approach

Advocating a coordinated, corporate-wide approach to office automation, Evans rejected a DP-based approach because there is mistrust of DPs among users. "Users feel that the DP department doesn't understand the office environment," he said.

While the DP mentality in an office environment was not very useful, Evans urged that companies make use of the DP department's system skills in setting up an office automation network.

He stressed the need for a strong company policy statement on office automation in order to define the issues and claimed that a standardized approach to local-area networking is necessary.

While local-area networks are the centerpiece of El Paso's office automation strategy, Evans said this did not require heavy DP involvement. "We are not convinced that you need to have central control of local networks," he added.

The controversy over baseband and broadband for local-area networks was a smokescreen, he said. "If it has the capacity, compatibility and integration capabilities we need, we don't care what wire it is."

Vital Ingredient

Multifunction terminals are actually the vital ingredients, he maintained. Since professionals use terminals, access to mass storage facilities is a major consideration in choosing equipment, according to Evans.

He predicted that within the distributed processing environment "microprocessor-based computational servers" will replace processors such as IBM's 4300 series and the Wang Laboratories, Inc. class of machines.

"Within our own company, in the next five to 10 years, the bulk of computing power, including the mainframes, will be directly attached to our local networks," he said.

Evans acknowledged, however, that it will not be plain sailing in his organization. Promotion of distributed processing, he said, had led to interdepartment jealousies within El

Paso and a perception had arisen that global decisions are not always best for everyone.

Office automation overlaps traditional areas of information systems and telecommunications systems. It requires a great deal of education to persuade people of the benefits of a corporatewide approach, Evans noted.

He also emphasized the need for a multivendor approach that could strain old loyalties. "This has been a real problem, particularly in smaller communities where vendors have a long-standing relationship with our company."

Despite these difficulties, Evans

concluded that the benefits were well worth having. "We want a multiple vendor environment because there is no one company that is always going to have the best price/performance product. If you have a range of products that you can target applications for and still maintain compatibility, the issues of productivity and cost justification take care of themselves," he said.

Need Compatibility

The need for compatibility was a central element in Evans' thesis. This would mean that analytical and evaluation expertise within the company was not duplicated and would result

in the successful integration of data, word and text processing.

Addressing the management of office automation within corporations, Walter Ulrich, a Houston-based consultant and session chairman, talked about the need for new skills.

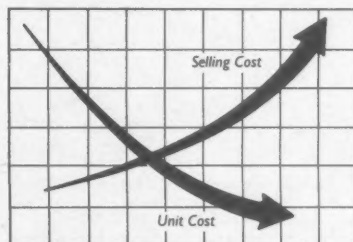
"Whoever will be in charge of this development is going to require patient negotiating skills in dealing with those who are the peers at the top of the organization."

This person, Ulrich said, would have to influence not only peers, but also superiors and subordinates. This would require an altogether different kind of approach to the one traditionally adopted by DP management.

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In the \$25,000 Range

Users 'Generally Pleased' With CBM 8032

By Hillel Segal
Special to CW

With benchmark results within an acceptable range, the Commodore Business Machines, Inc. CBM 8032 was the lowest priced system tested so far.

Benchmark researchers praised the computer's editing package, but noted several weaknesses in the Basic language implementation and operating system.

Users were generally pleased with the system and said their dealers had been supportive. But documentation was viewed as inadequate.

The CBM 8032 was tested in the Association of Computer Users' continuing series of small computer benchmark studies. The tests are conducted under contract by the University of Colorado's Business Research Division.

Each system is run through a series of standard exercises and real-life program simulations. The exercises include tests of CPU speed for math functions and disk I/O access.

Real-life application problems include a new product development problem and two tests: the scientific/engineering test (C-1) and the accounts receivable test (C-3).

The scientific/engineering test uses no disk access during execution. It solves a group of 50 equations with 50 variables. A fairly wide range of times have been noted from the testing of nearly three dozen systems over the past several years. Many systems have required more than 20 minutes to solve the problem.

The accounts receivable problem uses a mix of disk and CPU operations while setting up a group of 50 records, each with 10 fields. The file is updated 10 times in random order before a report is displayed on the screen. Times for this test have been somewhat less variable, with nearly all systems able to complete the test in under 10 minutes.

As always, we caution readers about overemphasis on the results of benchmark tests. While the tests serve as a useful comparison of actual execution speed in a practical environment, they say nothing about important factors such as software availability and product support.

Timing the Commodore

Results obtained from the CBM 8032 were about par for its class of system — a low-priced machine emphasizing Basic language and graphics. In the scientific/engineering test, the system posted a time of 23 minutes, 45.1 seconds to finish in the lower half of the group. Special enhancements in hardware and software seem to play a large part in some of the excellent times recorded by Wang Laboratories, Inc. and Smoke Signal Broadcasting, Inc. in this test.

For the accounts receivable test, the Commodore's time was a much more lively three minutes, 36 seconds. Here it ran in the top half of the group, a surprising result considering its low price. The disk access function plays a large role in this and many real-life accounting programs, and the CBM 8032 had fairly good

SCOREBOX

System: Commodore CBM 8032
Current Price: \$4,085

SYSTEMS UP TO \$25,000

	C-1 Scientific Engineering Time (min)	C-3 Accounts Receivable Time (min)
Pertec PCC 2000	28:48.4	6:04.3
North Star Horizon	12:01.9	1:57.7
Cromemco System Two	14:52.6	2:48.0
Texas Instruments 771	22:05.4	3:38.1
Vector Graphic System B	19:30.0	5:56.5
Decstation 78	7:55.7	4:21.5
Radio Shack TRS-80 Model II	20:00.7	3:38.6
Apple II+	21:11.0	6:17.4
Digital Microsystems DSC-2	13:24.9	3:28.8
Ohio Scientific C3-A	12:10.7	15:49.3
Alpha Micro AM-1011	5:18.3	3:25.3
Data General CS/10 Model C1	58:21.0	*
SD Systems SD-200	17:42.8	6:16.4
Wang 2200SVP	2:13.3	2:23.0
Altos ACS8000-15	7:54.5	10:41.5
Altos ACS8000-6 (hard disk)	7:54.5	1:35.1
NEC Astra 205	14:27.9	5:10.8
Dynabyte 5300	5:39.5	4:38.0
Billings BC-12 DF2M	21:48.6	5:09.2
Smoke Signal Chieftain 9822	3:13.3	1:40.7
Commodore CBM-8032	23:45.1	3:36.0
Vector Graphic 3005	to be covered	
Xerox 820	in future issues	
IBM Personal Computer		
IBM 5120		

* Tested with hard-surface disk rather than floppy. C-3 time was 2:40.3.

times in the disk I/O tests.

The CBM 8032 as tested cost \$4,085. The price included the CRT and keyboard, 32K bytes of memory, two 5¼-in. floppy disk drives, a printer and the Basic language.

The keyboard and display are contained in a single unit along with the processor and memory.

This is the 49th in a series of articles giving the highlights of benchmark tests conducted on popular small computer systems. The full reports are available from the Association of Computer Users.

The 32K-byte memory area is all available to the user because the language is included in read-only memory, and a separate 2K-byte area is used to hold the memory-mapped screen information. The user random-access memory is expandable to 96K bytes.

The disk drives, housed in a separate tabletop cabinet, store 509K bytes each for a total of about one million characters. The drives are optional; the system without drives sells for \$1,495.

Commodore offers several printers, a modem and a cassette recorder as accessories. The printer used in test-

ing was a 65 char./sec dot matrix unit made by Epson America, Inc., which cost \$795. Our benchmark team noted some problems with the printer; users said the feed mechanism sometimes slipped, sending the paper out of alignment.

The software controlling the printer operation was also criticized. It

takes three statements to open and close the use of the printer device. "You have to use too many magical commands that don't seem necessary," one user said.

Other printers offered for the system include a 150 char./sec bidirectional printer and a 40 char./sec daisywheel letter-quality printer.

The modem offered by Commodore is a 300 bit/sec unit, which users said worked well. However, the system uses a non-Ascii character code, necessitating an interface when other types of computers are on the other end.

The Commodore approach to oper-

ating systems and language, like several other computers in its price range, put all system commands within the Basic language. Thus, the user has no separate operating system with which to interface.

The Commodore version of Basic is not very enhanced compared to others we have seen. It has fewer statement types, especially those used in a structured programming approach, and lacks a PRINT USING command for formatting numerical output. Disk I/O is particularly cumbersome because the user must trap for all disk errors and print a rather uninformative error message instead of having the system handle this. Users, however, did not generally complain about the language.

One aspect of the system software did receive the praise of our benchmark team. This was the program editor, which they called "one of the easiest we've used."

Software Packages

Commodore-supplied software includes two data base management packages, word processing and legal time accounting. Other software was still under development. The word processing program, called Wordcraft-80, appeared satisfactory. Several users had a different package called Wordpro 4-Plus, offered by Professional Software Systems, Inc.

Commodore computers were first offered in 1977, when the PET 2001 was introduced. It was intended primarily as a hobbyist system. Since then, other models have introduced features more suited to business use, the culmination of which is the 8032. At the low end of the Commodore product line now is a system called the VIC-20, which uses a color television for display and is priced just under \$300.

A total of 14 users were interviewed during the survey portion of the benchmark study. All but three of the users were doing some programming.

The users rated hardware reliability and dealer support as fine, but were more negative in their comments about factory support and documentation. They said that Commodore did not appear to support its dealers or end users well. The documentation came in for the most criticism. Users said — and our benchmark testers agreed — that their only reference manual was incomplete, poorly organized and not suited to the novice. Many were relying on the PET/CBM Personal Computer Guide, which is published by Osborne/McGraw Hill.

While there are some drawbacks to the system, as we have noted, CBM 8032's high-quality screen and low system price make it an attractive unit to consider.

Hillel Segal is president of the Association of Computer Users, a nonprofit association with members in the U.S., Canada and several other foreign countries. A package of information about the Association of Computer Users is available from the group at P.O. Box 9003, Boulder, Colo. 80301.

Tool Takes Gator-Size Bite Out of Izod Work Load

NEW YORK — There's more going on at David Crystal's than sticking alligators on designer shirts.

A subsidiary of General Mills, Inc., David Crystal is the U.S. manufacturer of the Izod LaCoste line of apparel. Since the installation of a flowcharting software tool called Logic Chain, the company has reportedly been able to improve people productivity and streamline its backlog of orders for its clothing line.

Dan Vecchio, manager of development resources at the company, acquired Logic Chain in August 1981 from the Applications Programming Co. in Moorestown, N.J., after learning that it provided a chart of the logic flow through a program, presenting a linked diagram that retains procedural information in the form of worded logic.

"Although I was familiar with some other flowcharting software, I chose Logic Chain for two main reasons," Vecchio explained. "I wanted a flowchart program to use as a device to rectify and eliminate problems, and I also wanted an ongoing tool for documentation and maintenance. Logic Chain has features that are helpful for meeting both needs." So for \$10,000 he acquired Logic Chain.

Staff of 21

Vecchio oversees a staff of 21 DP professionals who generate the systems required by the organization, which is spread out over Puerto Rico, North Carolina and Pennsylvania, as well as New York City. The staff primarily uses Burroughs Corp.'s B 6800, but also uses a Sperry Univac 90/30 and a Burroughs B 1985 and B-1860. Most of the major pro-

grams are written in Cobol.

Since more than half of his staff's time is spent in systems maintenance, Vecchio was interested in any tool that would make his group more productive. Logic Chain provides a complete analysis of all logic linkage and an analysis of all data linkage enabling the programmer to obtain an understanding of the program before making any changes.

Three documents in the Logic Chain output provide additional program maintenance assistance. The definition division of the source program listing provides initial values and data structure formats enabling the programmer to identify substructure and superstructure linkages more readily.

Vecchio finds these features especially helpful during special projects that need

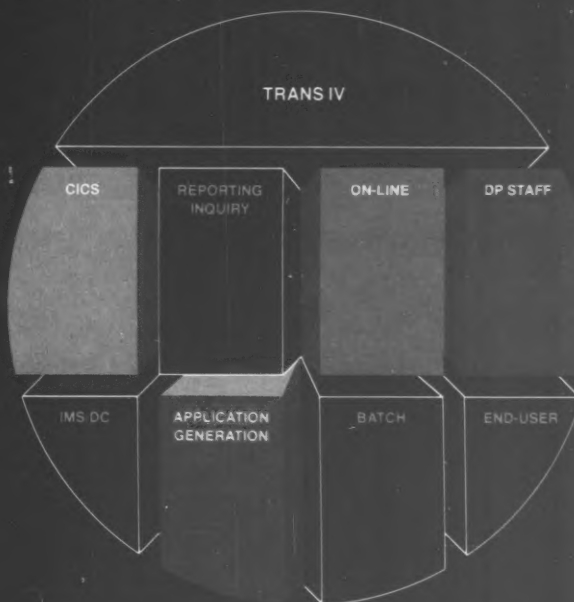
to be done fast and often require additional staffing.

"With Logic Chain, new people are able to learn what already exists and get up to speed quickly," he said.

Installation of Logic Chain was painless as well, according to Vecchio, who recalled the software developer's role: "Charlie Bouman [of Applications Programming] worked with the tech team to develop a procedure to inter-

face," he explained. "Learning to use Logic Chain requires a minimum of time, perhaps one hour."

Bouman agreed. "There's really nothing to learn. The package is a parameter device: controls are outside, and the program doesn't have to be modified. The only learning involved is in learning to read the flowchart itself and learning its options."



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System Aids in Debugging County Health Care

ROSEBURG, Ore. — Thanks to a new computer system, Douglas County health officials no longer have to thumb through archaic card files to maintain timely public health records here.

The health care information system, featuring an IBM 4341 processor and three 3270 display terminals, has eliminated thousands of inaccurate and archaic files,

while providing an important immunization service to a population of 89,500.

"If a measles outbreak occurs, an examination of computer records could help identify persons of school or other age groups who have not been immunized or those who need boosters," Dr. Elizabeth B. Young, a former county health officer, said. "We could then mail or telephone these individuals

to [ask them to] appear for immunization," she continued.

Before the IBM system was implemented, the Douglas County Health Department struggled to keep about 100,000 three by five index cards current. "The place was in shambles," according to the county's director of data processing, Elton Szpaller. With the help of the 4341

3270 display terminals, the problem of tracking the public's health records has been streamlined, allowing health officials to access medical information quickly and painlessly.

The system proved its efficiency recently when a worried mother phoned the department from a Texas border town that was experiencing a serious measles outbreak. She had just moved

there from Douglas County with her family and asked if it was possible to check immunization records on her children.

Within seconds, she was relieved to learn the exact dates and types of immunizations administered to her children.

Another example occurred when unusual rashes were reported in Douglas County following a series of immunizations. After a quick check of records, it was found that all the rash victims had been immunized on the same day. With the aid of the system, these cases were isolated, and the cause of the rash was soon found to be a single bad batch of medicine.

Other Problems Solved

Other problems the system alleviated were the tracking of the highly transient timber work force common to the area and the county's senior citizens, who receive annual flu shots.

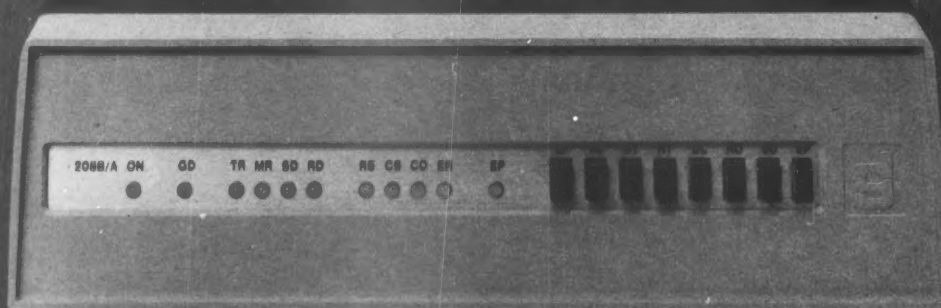
When asked about the dollar savings incurred with the IBM system, Szpaller said that the department has not yet calculated the exact figures, but quickly pointed to the above cases to illustrate how the system circumvents public health problems: "Can you put a price tag on that? Probably not. Is it valuable? Certainly."

Another detail in the Douglas County story is the fact that they got their software practically for free. The package came from the Metropolitan Health Department of Nashville, Tenn., which spent approximately \$500,000 developing and installing its health care system. When charting the county's DP needs, Young contacted the Nashville agency, which invited her to use a copy of its software.

For the price of an airplane ticket, some tapes, modifications and some debugging, Douglas County acquired its software.

"We had the luxury of picking and choosing among software packages because of the IBM equipment," Szpaller said. The already-developed Nashville software happened to be "almost a perfect fit."

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Program Based on 'Discover'

'Enthusiasm Runs High' For School Career Center

TACOMA, Wash. — What do you want to be when you grow up?

To help high school students answer that question more effectively, the Tacoma School District is relying heavily on five computerized career centers.

"Enthusiasm runs high," according to Mike Appleby, career coordinator and director of one of the Tacoma career centers. "Students arrive as early as 7:45 a.m. when the center opens, and some stay until the doors close at 4 p.m.," he continued.

Each career center has three terminals connected to an IBM 4341 computer located in the downtown school district administration building. A computer program called Discover, developed by Discover Foundation, Inc. of Westminster, Md., enables students to define their areas of specialty and interest.

The Discover program is an outgrowth of an earlier program called the Computerized Vocational Information System, which was developed by a consortium of school officials and IBM in Willowbrook, Ill. When the program expanded and the independent software firm became involved, Discover was born.

Topic Areas

The system lists 24 topic areas for exploration, including understanding values, occupations, exploring career plans and financial aid. It also describes 90% of the current employment opportunities in the state, along with about 430 educational training opportunities.

Any student can use the system because no typing or programming knowledge is required. To start the pro-

gram, a student enters an assigned number followed by his birthdate. A system directory appears on the screen and he then selects areas of interest. Further decisions are made when the tip of an electronic wand is pressed against the screen.

According to Ed Roalkvam, the helping counselor in careers for the Tacoma School

District, the system has been "well received in all five high schools." Many students go all the way through the program, starting first with the interest surveys and ending with college or vocational listings.

The system is also helping students select colleges. The students first define the desired location, size and spe-

cialization of a college, and by process of elimination, the system narrows down its list of thousands of schools to a few schools.

The Discover software was originally purchased four years ago for \$2,000. It is updated annually by the vendor at a cost of \$1,200 to ensure complete and current information listings. The

school district is also planning to expand the program's vocational data by adding the Washington Occupational Information Service to the system, which would provide additional job-related information within the state.

"Discover is not intended to replace school counselors," Appleby said.

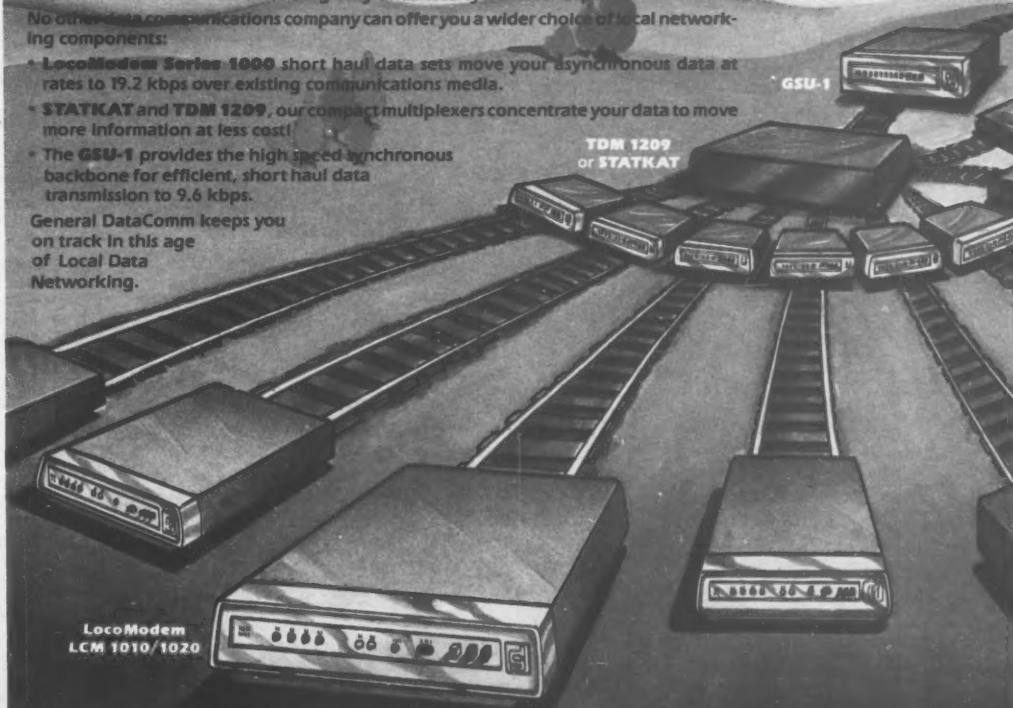
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10th Imacs Congress Slated Aug. 8 at Concordia Univ.

NEW BRUNSWICK, N.J. — The 10th annual world conference on systems, simulation and scientific computation will be held at Concordia University, Montreal, Canada, Aug. 8-13. The conference is sponsored by the International Association for Mathematics and Computers in Simulation (Imacs).

Cosponsors include the International Association for Mathematical Modeling, the International Society for Computational Methods in Engineering, the Japanese Society for Simulation Technology, the Scandinavian Simulation Society and the Society for Computer Simulation.

Symposium topics will include:

modeling and simulation of energy systems, modeling and simulation of biological systems/parallel computation.

Registration fees are \$250 (Canadian)/person if paid before April 15 and \$285 after that date.

Additional information is available from Prof. S. Sankar, 10th Imacs Congress Cochairman, Concordia University, Department of Mechanical Engineering, 1455 de Maisonneuve Blvd. W., Montreal, Quebec H3G 1M8, Canada.

Grant Encourages, Aids Use of Micros In School Programs

FORT WORTH, Texas — A grants program to encourage and support the application of microcomputer technology in education has been established by Radio Shack, a division of Tandy Corp.

The Tandy TRS-80 Educational Grants Program will award TRS-80 hardware, software, courseware and related products to individuals or nonprofit educational institutions whose proposals would benefit the American educational community. Radio Shack has already contributed \$500,000 worth of TRS-80 equipment to the program.

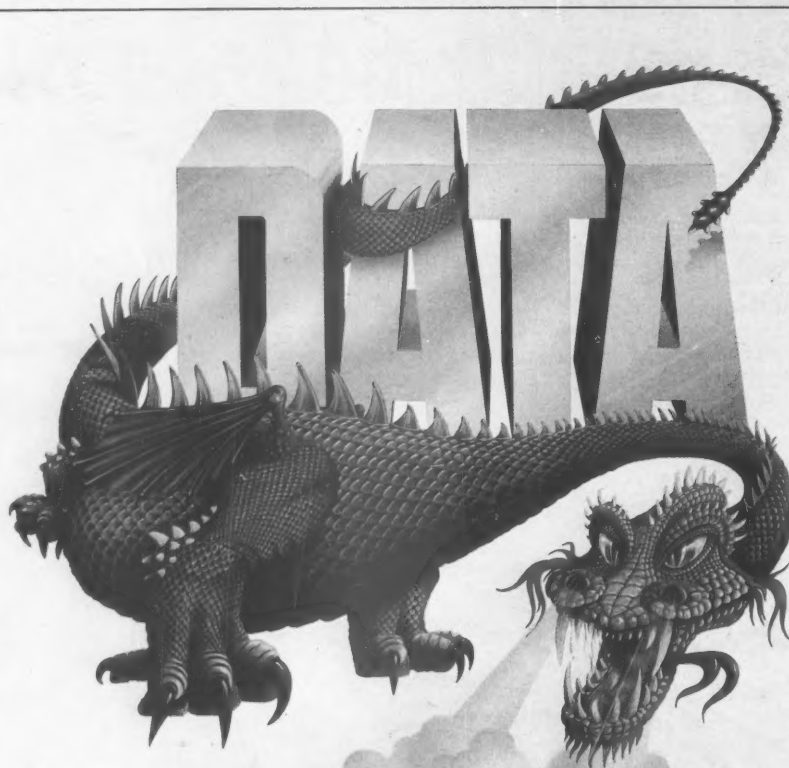
An Educational Grants Review Board will review submitted proposals and make recommendations for equipment allocations. The committee will be chaired by Dr. Lee Droegemuehl of the University of Arizona's College of Education, representatives from the American Association of School Administrators, the National Council of Teachers of Mathematics and other educators.

Radio Shack will also fund a graduate assistantship at the University of Arizona to provide an administrative assistant for the committee.

An information packet on the program is available. All proposals will be discussed by the committee quarterly before determining allocations. Nonvoting technical consultants from Radio Shack will provide advice to committee representatives.

The committee will review proposals addressing "Computer Literacy Among Teachers" at its first quarterly sitting. The deadline for submission is June 30.

Information on proposal format and content is available from Tandy TRS-80 Educational Grants Program, Radio Shack Education Division, 400 Tandy Atrium, Fort Worth, Texas 76102.



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Bookkeeping Operations Streamlined System Helps Gas Company Cut Its Costs

JACKSONVILLE, Fla. — Sawyer Gas Co., a local distributor of liquid propane gas, has cut its operating costs in the two and one half years since it converted from a manual to a computerized distribution system.

Sawyer had used ledger-card machines to handle bookkeeping operations since the company was established in 1960. Diversification into heating, air conditioning and appliance businesses, however, proved the ledger-card system too slow to keep up with customer demands.

Charles Sawyer, president of Sawyer, said the company "spent three to four years making up our minds to go computer."

Once that decision was made, Sawyer said, "we looked at about six computers; all of the major, most renowned brands." The choice was narrowed down to two firms and "the decision was made in less than a week," Sawyer said.

Wang Wins

Sawyer decided on a Wang Laboratories, Inc. VS system with 512K bytes of main memory, 90M bytes of disk storage, 10 CRT workstations and a 600 line/min printer.

Programs for the new system were written in-house. "We were typical. We had been on ledger cards. We redesigned our system from scratch," Sawyer said.

The Wang VS was used to automate the company's LPG distribution system including general ledger, invoicing and accounts receivable, automatic deliveries and route preparation, delivery ticket, printing, parts and appliance inventory control and customer inquiries, Sawyer explained.

Five CRT workstations on the sales floor process telephone and walk-in inquiries, sales and delivery requests for Sawyer customers.

Daily printouts of accounts receivable information on customers are available to every Sawyer branch, he explained.

A staff of eight was required to post transactions on the company's ledger-card machines, often falling two to three weeks behind during winter months. Late payment fees were assessed only on the largest accounts, Sawyer said.

With the old system employees had to flip through 25,000 ledger cards to learn which accounts were delinquent, how old the account was and whether a statement or service termination was required.

Automatic Aging

With the Wang system each account is automatically aged, late payment and service charges are assessed, appropriate dunning notices sent and invoices printed. Sawyer claimed the additional revenue generated from late payment and service charges alone is enough to cover his monthly computer costs.

Each morning the computer generates preprinted route tickets for the next day's deliveries. Included on the ticket are directions on how to find the location, how much the customer owes, notes on the account and so on.

The computer schedules deliveries either at preset frequencies or by using a "modified degree-day delivery system." The system tells what the customer will use on a degree day and on a nondegree day and adds to that amount what he will use regardless of the weather. The company thereby knows what is left in every tank.

This allows Sawyer flexibility in scheduling deliveries especially during periods of peak demand. The number of unnecessary deliveries is lowered. With the old system Sawyer Gas overdelivered out of fear that customers would run out. Sawyer estimated his company was making

50% of its deliveries needlessly.

The system has enabled the firm to cut its number of delivery trucks and personnel by just less than 30%, Sawyer explained.

"We have virtually eliminated all handwork," Sawyer said. "Everything in the company is on the computer."

Sawyer is currently in the process of writing a program to include vehicle maintenance on the system. With approximately 120 vehicles in use by the company, Sawyer explained, it would be "totally impossible" to determine by hand or by ledger card when a vehicle needed servicing or retiring.

"We run around all day doing what the computer tells us," Sawyer laughed. "It's made my job easier," he added.

Sawyer receives daily reports on how many miles each driver goes, the number of hours he puts in, the miles the driver goes between stops and how long he spends at each stop. Sawyer has reduced his service parts and appliance inventory 30% and realized a 25% to 35% improvement in tank-asset productivity.

"If somebody came in to take our computer away they could have the keys to the company," Sawyer said. "It has just become the manager of our firm."

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April 21-23, Washington, D.C. — **Introduction to Statistical Analysis System.** Contact: Registrar, Applied Technology Associates, Inc., Suite 1418, 1710 Goodridge Drive, McLean, Va. 22102.

April 21-28, Hanover, West Germany — **Cebit '82.** Contact: Dwight Umstead, U.S. Department of Commerce, ITA/OEP/IPD, Room 6015A, Washington, D.C. 20230.

April 22, Palo Alto, Calif. — **California Computer Show.** Contact: Norm De Nardi Enterprises, Suite 204, 289 S. San Antonio Road, Los Altos, Calif. 94022.

April 22-23, New York — **Developing and Implementing Purchase Order Management Systems.** Contact: Sylvia Vogelmann, Seminar Manager,

Center for Retailing Management, 425 Park Ave., New York, N.Y. 10022.

April 22-23, Washington, D.C. — **IMS/VS Data Communications Programming.** Contact: Data Base Management, Inc., 281 Hartford Tnpk., Vernon, Conn. 06066.

April 22-23, Atlanta — **Fundamentals of Data Processing and Telecommunications.** Contact: National Institute for Management Research, P.O. Box 3727, Santa Monica, Calif. 90403.

April 22-23, Washington, D.C. — **Successful Software Management.** Contact: Data Processing Management Association Education Foundation, Suite 1016, 5959 W. Century Blvd., Los Angeles, Calif. 90009.

April 22-23, Los Angeles — **Data Communications: Advanced Concepts and Systems.** Contact: Seminar Department, Datapro Research Corp., 1805 Underwood Blvd., Delran, N.J. 08075.

April 22-23, Philadelphia — **IMS Systems Management Workshop.** Contact: Sondra Schwartz, Boole & Babbage, Educational Services Division, 510 Oakmead Pkwy., Sunnyvale, Calif. 94086.

April 23, Los Angeles — **Computer Graphics in Architecture & Engineering.** Contact: George Borkovich, 3400 Edge Lane, Thorndale, Pa. 19372.

April 24, San Francisco — **CICS/VS Macro Level Workshop.** Contact: Expertise Extension Workshop, 220 N. Glenoaks Blvd., Burbank, Calif. 91502.

April 24, Los Angeles — **Vsam Coding in Cobol Workshop.** Contact: Expertise Extension Workshop, 220 N. Glenoaks Blvd., Burbank, Calif. 91502.

April 24-28, Hanover, Germany — **Tutorial Week Europe '82.** Contact: Institute of Electrical and Electronics Engineers Computer Society, P.O. Box 639, Silver Spring, Md. 20901.

April 25-30, Washington, D.C. — **Advanced DP Training Management Workshop.** Contact: Linda Hubacek, Deltak, Inc., 1220 Kensington Road, Oak Brook, Ill. 60521.

April 26-27, Boston — **Word Processing II.** Contact: National Institute for Management Research, P.O. Box 3727, Santa Monica, Calif. 90403.

April 26-27, Detroit — **Digital PABX.** Contact: American Institute for Professional Education, Carnegie Building, 100 Kings Road, Madison, N.J. 07940.

April 26-27, Los Angeles — **Ada.** Contact: Education Foundation of the Data Processing Management Association, Department Ada, P.O. Box 91295, W. Century Blvd., Los Angeles, Calif. 90009.

April 26-27, Boston — **Fundamentals of Data Processing and Telecommunications.** Contact: National Institute for Management Research, P.O. Box 3727, Santa Monica, Calif. 90403.

April 26-27, Dallas — **Information-Oriented Graphic Design in Computer Graphics.** Contact: Eloise Wenker, National Computer Graphics Association, 2033 M St., N.W., No. 300, Washington, D.C. 20036.

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Then our NCC Show Issue comes out June 7th, the day of the show. It will have last-minute show information, speech previews and other show details. Pick up a copy at the *Computerworld* booth. Black and white ad close is May 27th*. Color close is May 21st.

Finally, our June 14th NCC Wrap-Up Issue will have complete coverage of all that happened, prepared by our 35-person editorial staff. You'll read who said what, who introduced what and how it works, and review the show's features and highlights in words and pictures. Black and white ad close is June 4th. Color close is May 28th.

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tion Sciences, Inc., Q.E.D. Plaza, P.O. Box 181, Wellesley, Mass. 02181.

April 26-27, Arlington, Va. — **Data Dictionary: Selection and Implementation.** Contact: Priscilla Goudreault, Education Coordinator, Q.E.D. Information Sciences, Inc., Q.E.D. Plaza, P.O. Box 181, Wellesley, Mass. 02181.

April 26-28, Arlington, Texas — **Screen Design.** Contact: Priscilla Goudreault, Education Coordinator, Q.E.D. Plaza, P.O. Box 181, Wellesley, Mass. 02181.

April 26-28, Chicago — **Systems Analysis and Design: Concepts and Effective Practice.** Contact: Seminar Department, Datapro Research Corp., 1805 Underwood Blvd., Delran, N.J. 08075.

April 26-28, San Francisco — **Fundamentals of Data Communications.** Contact: Technology Transfer Institute, 741 10th St., Santa Monica, Calif. 90402.

April 26-28, Chicago — **Effective Computer Operations Management.** Contact: Seminar Department, Datapro Research Corp., 1805 Underwood Blvd., Delran, N.J. 08075.

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April 26-28, Atlanta — **Information Systems Planning: A Structured Approach.** Contact: Seminar Department, Datapro Research Corp., 1805 Underwood Blvd., Delran, N.J. 08075.

April 26-28, Berkeley, Calif. — **Symposium on Security and Privacy.** Contact: Institute of Electrical and Electronics Engineers Computer Society, 10662 Los Vaqueros Circle, Los Alamitos, Calif. 90720.

April 26-28, Boston — **Data Base Management Systems: A Comparative Analysis of General-Purpose**

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April 26-28, New York — **Integrated Office Automation Strategies.** Technology Transfer Institute, 741 10th St., Santa Monica, Calif. 90402.

April 26-28, Boston — **Data Processing: Fundamental Concepts.** Contact: Seminar Department, Datapro Research Corp., 1805 Underwood Blvd., Delran, N.J. 08075.

April 26-28, Baltimore — **Programming in Basic.** Contact: The American Institute for Professional Education, Carnegie Building, 100 Kings Road, Madison, N.J. 07940.

April 26-28, Waltham, Mass. — (Continued on Page 34)

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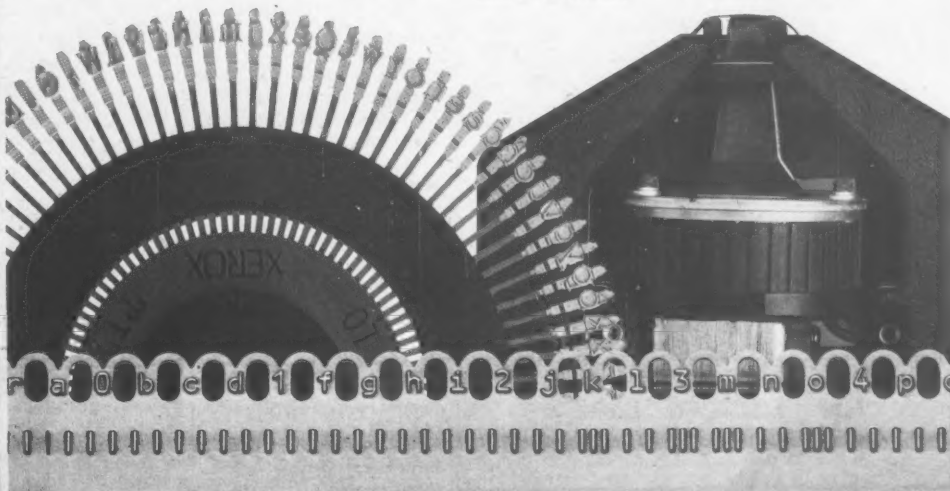
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April 26-28, Waltham, Mass. — **Structured Testing.** Contact: Bentley College, Center for Continuing Edu-

cation, Beaver and Forest streets, Waltham, Mass. 02254.

April 26-28, Milwaukee — **Engineering Project Management.** Contact: Battelle, 4000 N.E. 41st St., P.O. Box C-3595, Seattle, Wash. 98105.

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agement. Contact: Seminar Department, Datapro Research Corp., 1805 Underwood Blvd., Delran, N.J. 08075.

April 26-28, Arlington, Texas — **Screen Design.** Contact: Education Coordinator, Q.E.D. Information Sciences, Inc., 180 Linden St., P.O. Box 181, Wellesley, Mass. 02181.

April 26-28, Philadelphia — **Advanced DP Auditing Concepts.** Contact: Marge Umlor, DP Auditors Foundation, 373 S. Schmale Road, Carol Stream Ill. 60187.

April 26-28, Washington, D.C. — **Local Area Computer Networks.** Contact: The George Washington University, Continuing Engineering Education, School of Engineering and Applied Science, Washington, D.C. 20052.

April 26-29, New York — **CICS/VS Testing & Debugging.** Contact: I. Zelin, Comped, 1133 Ave. of the Americas, New York, N.Y. 10036.

April 26-29, Washington, D.C. — **Computer Graphics Systems: Design and Applications.** Contact: The George Washington University, Continuing Engineering Education, School of Engineering and Applied Science, Washington, D.C. 20052.

April 26-30, San Francisco — **Fundamentals of Computer Systems Analysis and Design.** Contact: American Management Associations, 135 W. 50th St., New York, N.Y. 10020.

April 26-30, Jacksonville, Fla. — **Auditing in the Contemporary Computer Environment.** Contact: Marge Umlor, DP Auditors Foundation, 373 S. Schmale Road, Carol Stream, Ill. 60187.

April 26-30, Omaha, Neb. — **Structured Systems Design/Structured Program Design Combined Course.** Contact: Jim Highsmith, Ken Orr and Associates, Inc., 715 E. 8th, Topeka, Kan. 66607.

April 26-30, Washington, D.C. — **CICS/VS Command Level Programming.** Contact: Data Base Management, Inc., 281 Hartford Tnpk., Vernon, Conn. 06066.

April 26-30, Boston — **Systems Analysis Workshop.** Contact: Priscilla Goudreault, Education Coordinator, Q.E.D. Information Sciences, Inc., 180 Linden St., P.O. Box 181, Wellesley, Mass. 02181.

April 26-30, Pittsburgh, Pa. — **Design Techniques Workshop.** Contact: Bill Schoonmaker, BSI, 4720 Montgomery Lane, Bethesda, Md. 20814.

April 26-30, New York — **Structured Design Workshop.** Contact: Structured

Methods, Inc., 7 W. 18th St., New York, N.Y. 10011. Also being held in Chicago, April 26-30.

April 26-30, New York — **Systems Design Workshop.** Contact: Priscilla Goudreault, Education Coordinator, Q.E.D. Information Sciences, Inc., 180 Linden St., P.O. Box 181, Wellesley, Ma. 02181.

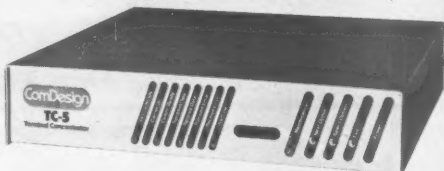
April 26-30, San Francisco — **Structured Analysis/Design Workshop.** Contact: Structured Methods, Inc., 7

W. 18th St., New York, N.Y. 10011.

April 27-28, Phoenix — **Developing & Managing the Disaster Recovery Project.** Contact: Devlin Associates, Inc., Suite 795, 1150 First Ave., King of Prussia, Pa. 19406.

April 27-28, Weston, Mass. — **How to Audit and Control Computer Systems.** Contact: Northeastern University, Center for Continuing Education, 303 Wyman St., Waltham, Mass. 02154.

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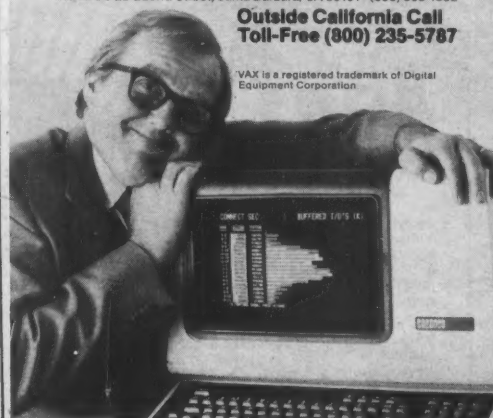
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Calendar

April 27-29, New York — **Data Base Fundamentals**. Contact: Priscilla Goudreault, Q.E.D. Information Sciences, Inc., 180 Linden St., P.O. Box 181, Wellesley, Mass. 02181.

April 27-29, Chicago — **Information Management Conference for Manufacturing**. Contact: The Information Management Exposition & Conference for Manufacturing, McCormick Place, Chicago, Ill. 10017.

April 27-29, San Francisco — **Power Comparison Workshop**. Contact: Institute for Software Engineering, Suite 200, 535 Middlefield Road, Menlo Park, Calif. 94025.

April 27-30, Boston — **Data Base Design**. Contact: Information Methods (USA) Corp., 504 Totten Pond Road, Waltham, Mass. 02154.

April 28-29, New York — **Multivendor DC Networks Planning, Perspectives and Strategies**. Contact: Priscilla Goudreault, Education Coordinator, Q.E.D. Information Sciences, Inc., Q.E.D. Plaza, P.O. Box 181, Wellesley, Mass. 02181.

April 28-30, Baltimore — **DP for Accountants and Financial Executives**. Contact: American Institute for Professional Education, Carnegie Building, 100 Kings Road, Madison, N.J. 07940.

April 28-30, Boston — **Design of On-Line Systems**. Contact: Priscilla Goudreault, Education Coordinator, Q.E.D. Information Sciences, Inc., 180 Linden St., P.O. Box 181, Wellesley, Mass. 02181.

April 28-30, New York — **Strategic Planning for Office Automation**. Contact: Advanced Office Concepts, Suite 433, One Bala-Cynwyd Plaza, Bala-Cynwyd, Pa. 19041.

April 28-30, San Diego — **Data Communications Systems**. Contact: The American Institute for Professional Education, Carnegie Building, 100 Kings Road, Madison, N.J. 07940.

April 29, Boston — **Intro-**

duction to Metasystem. Contact: Structured Methods, Inc., 7 W. 18th St., New York, N.Y. 10011.

April 29, Los Angeles — **Fundamentals of Data Processing for Non-Data Processing Managers**. Contact: Applied Management Institute, 623 Great Jones St., Fairfield, Calif. 94533.

April 29-30, Denver — **Digital PABX**. Contact: The American Institute for Pro-

fessional Education, Carnegie Building, 100 Kings Road, Madison, N.J. 07940.

April 29-30, San Francisco — **Evaluating and Selecting Computer Software Packages**. Contact: Seminar Department, Datapro Research Corp., 1805 Underwood Blvd., Delran, N.J. 08075.

April 29-30, Houston — **Word Processing II**. Contact: National Institute for Management Research, P.O. Box

3727, Santa Monica, Calif. 90403.

April 29-30, Washington, D.C. — **Public and Private Packet-Switched Networks — The X.25 Protocol**. Contact: The George Washington University, Continuing Engineering Education, School of Engineering and Applied Science, Washington, D.C. 20052.

April 29-30, Phoenix — **Ad-**

vanced Disaster Recovery Planning. Contact: Devlin Associates, Inc., Suite 795, 1150 First Ave., King of Prussia, Pa. 19406.

April 30-May 3, New Orleans — **Society of Telecommunications Consultants Spring 1982 Conference**. Contact: Effie Cooper, Executive Director, Suite 1410, 1 Rockefeller Plaza, New York, N.Y. 10020.

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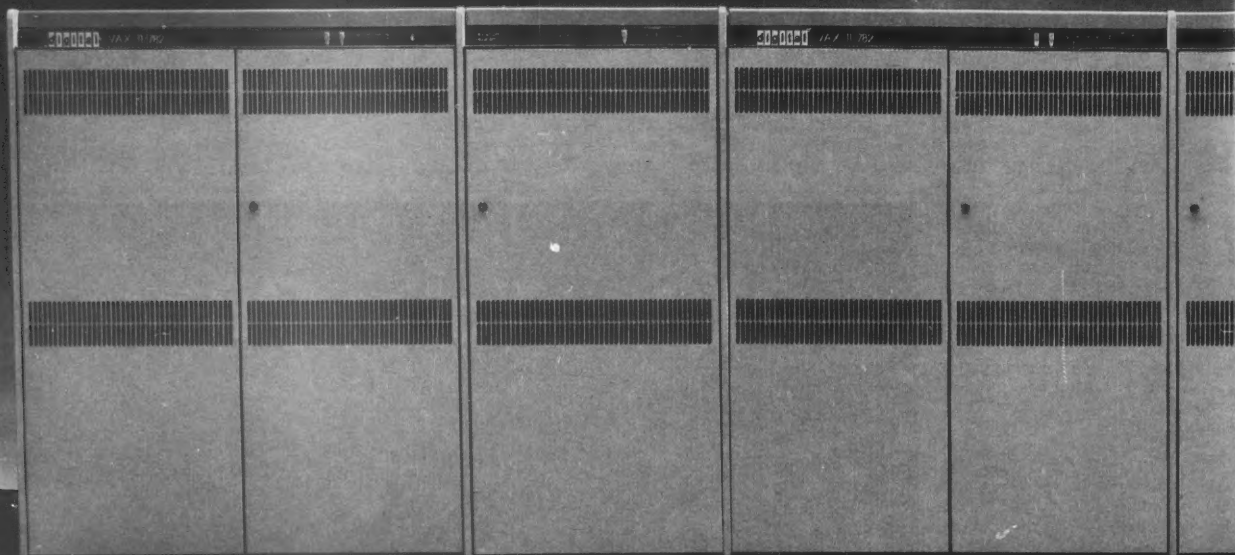
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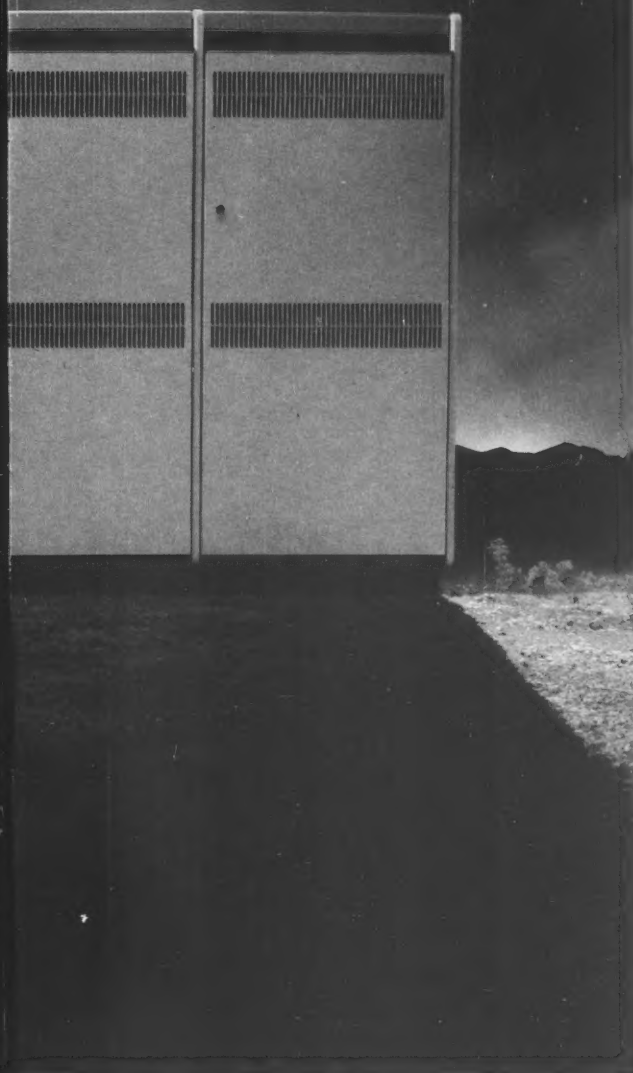
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EDITORIAL

Users Speak Out

The American National Standards Institute gave users four months to respond to its proposed Cobol-80 standard, and those cards and letters are still coming in.

The deadline for responses was Feb. 13 and, officially, 2,200 responses have been received. Fewer than a dozen of these are in favor of the standard.

Obviously, the X3J4 subcommittee has some rethinking to do. The users were asked for their opinion on the Cobol-80 standard, which reportedly is not compatible with the 1974 Cobol standard.

In addition to expressing their feelings about Cobol-80, many conducted extensive analyses of what it would cost them to convert to the new standard.

Joseph T. Brophy, a member of the Ansi X3 Committee for Information Systems and senior vice-president of Travelers Insurance Co., has helped lead the opposition to Cobol-80. Brophy said the conversion costs reported by respondents were staggering.

It is difficult to have a completely upward-compatible standard, as Brophy has admitted, but it certainly should be a key consideration. With the effects of the recessionary economy and the high cost of DP professionals among the problems facing DP managers, one thing they do not need to add to their list of woes is a huge conversion cost.

This time the users spoke out. They can only hope the X3J4 subcommittee was listening.

DATA PAST

Five Years Ago April 4, 1977

ATLANTA — A demonstration of synchronous CRT terminals emulating IBM 3270 mode that can operate on a packet-switched network was featured at the Interface '77 data communications conference here.

Raytheon Data Systems Co. showed its CRT terminals operating with software that included compatibility with the CCITT X.25 protocol.

The software included DMEP-II from Cambridge Telecommunications of Bedford, Mass., which replaced control and emulation programs in the IBM 370X front-end processors. Also used for the demonstration was Raypac software designed to be loaded into local-site Raytheon PTS-100 terminal controllers.

WHITE PLAINS, N.Y. — In what seemed like a clearance sale to industry observers, IBM slashed purchase prices on the CPUs and memory used in its 370/158 and 168 systems.

Simultaneously, the mainframer introduced a lower cost processor for the 370 line — not a system — said to operate 1.6 to 1.8 times faster than the 370/168-3 CPU.

The company announced a 30% purchase price reduction on processing units used in the 370/158 and 168 and a 35% purchase, rental and lease price reduction on its Mosfet main memory.

Ten Years Ago March 22, 1972

BOSTON — The Federal District Court here was asked to rule that Federal Bureau of Investigation maintenance and dissemination of incomplete or inaccurate criminal identification records violated the Constitution.

Paul Cowan, who claimed he lost his job through false records contained in the FBI's data bank of criminal identifications, filed the class action suit here claiming that such data bank information violated the First, Fourth, Fifth, Ninth and Fourteenth Amendments of the Constitution.

The FBI declined to comment on the matter.

SACRAMENTO, Calif. — A planned computerized welfare information system that could save the state an estimated \$133 million annually would have to overcome tough opposition before it was approved.

The system, said to cost \$4 million, was proposed by the state Department of Social Welfare, which reviewed recommendations made by the state's Department of Finance, where a spokesman said, "Our basic desire is to implement the system as soon as possible to begin to accrue the savings."

Legislative committees, however, were holding hearings and some sharp criticism based on a legislative study was expected to be aired.



"You can't touch me — and besides, you're irrelevant!"

LETTERS

Unfairly Represented

Ordinarily, Evans & Sutherland appreciates being mentioned in the press. Generally speaking, the press has been kind to us and we've tried to be open and honest with the reporters who call us for information. We were, therefore, deeply disappointed by the article "First Commercial User of Rolm CBX Says System Fine, But Bugs in Vendor Support" [CW, Mar. 1].

We believe that the quotations attributed to Brad Morgan of our company were taken out of context and were used as the only "hard information" in an article that very unfairly represents the position of Evans & Sutherland relative to our relationship with Rolm Corp. and our success with its data transfer add-on feature for the Rolm telephone system.

As a company, we are very pleased with the Rolm installation, the system capabilities and the service support that we have received. We believe this high level of satisfaction was reflected in the comments that our employee made to your reporter.

We are very disappointed that the positive nature of our relationship with Rolm did not find its way into the article.

Gary E. Meredith
Vice-President

Chief Administrative Officer
Evans & Sutherland
Salt Lake City, Utah

'Ivory Tower' Syndrome

I was pleased to read the editorial "A Realistic Approach" [CW, Mar. 8] in which you argued for strong relationships between the business community and academic programs in information systems. I would like to emphasize, however, that a mutually beneficial relationship is dependent neither on the program being part of

a business school nor on its emphasizing management information systems research.

The new Program in Computer and Information Science at Dartmouth College is one example which, though it fits neither of your implied criteria, strives hard for and depends greatly upon mutually productive relationships with many business organizations.

Although a research component is in our future plans, we are concentrating at the moment on developing and refining a curriculum emphasizing practical applications of technology and systems methodologies in the business environment.

This appears to be quite attractive to organizations, many of which have been extremely supportive in providing key personnel in information systems to address classes on the practical realities of the business world.

Although many of our students have a work history, our experience strongly supports your thesis that a good synergism between business and academia can do much to reduce the "ivory tower" problem for those students with little previous experience. Thank you for speaking out.

A. Kent Morton
Executive Director
Program in

Computer & Information Science
Dartmouth College
Hanover, N.H.

Computerworld welcomes comments from its readers. Preference will be given to typed, double-spaced letters of 150 words or less. Letters may be edited for purposes of brevity and clarity. Letters should be addressed to Editor, Computerworld, 375 Cochituate Road, P.O. Box 880, Framingham, Mass. 01701.

GETTING AHEAD IN DP/Donald J. Berardo

Consult Yourself Before Seeking a Consultant

Some people believe that there's no such thing as a trustworthy consultant. They're right — about many of them.

Although it is true that there are some reliable, professional consultants who don't try to buffalo a company or prolong their services unnecessarily — this type isn't in the majority.

Because more and more companies have formed the habit of using consultants, and because in some cases consultants are necessary as well as helpful, it's wise to know how to deal with them.

Small Potatoes

On the surface, dealing with consultants may seem like small potatoes when compared to buying a new piece of equipment.

But beware. Although the arrangement with a consultant is usually for a shorter term, it can be more crucial because the consultant's recommen-

dations can be a major influence on your company's direction and budget — and thus have long-term effects.

Before discussing how to find and deal with your own consultants, let's consider how to deal with someone else's.

People sometimes bring in consultants to support their proposals. Often, these consultants have really been hired to tell someone what he already wanted to hear because of certain vested interests. You, of course, shouldn't be so easy to please. Ask for credentials, references and a chance to study the consultant's findings.

The first and most important step toward hiring your own consultant is to define your question or problem very clearly and specifically and to decide exactly what you expect to get from the consultant. You must convey this information to the consultant in no uncertain terms.

Before bringing anyone in from the outside, be sure to have enough familiarity with and knowledge about the subject at hand so you can evaluate what the consultant tells you.

Many consultants talk a good game, know a little bit about a lot of things and can make their opinions sound as rock-hewn as the Ten Commandments. Skepticism is advisable and detailed knowledge is crucial so that you don't get taken for a ride or steered in the wrong direction.

Consultants, it must always be remembered, have a vested interest in finding problems that need extensive attention — by a consultant.

The worst way to hire a consultant is by saying, "We've got this problem, see, and we don't quite know what it is. It may be this or it may be that or it may have something to do with this other thing. What should we do?"

Two months and \$20,000 later, the consultant probably will get back to

you and say, "Yes, after looking around your company, we agree that you certainly do have a problem."

"We'll need to do lots of preliminary research and then we'll do a feasibility study and then we'll keep monitoring things for a while to make sure everything's going OK."

A far better approach is to do as much preliminary work as possible, then present yourself to the consultants like this: "We've already done X, Y and Z, which indicate that there are four possible solutions to our problems. We'd like you, as an objective outsider, to study these alternatives and rank them according to their strong points and weak points. We'd like your first report in six weeks."

Before you get to this stage, however, you must find a reputable consultant with some experience regarding your problems. The process is similar to that when looking for a vendor. Read the professional journals, which sometimes do reports on DP consultants, evaluating them and noting their areas of expertise.

Your best source of information is other companies. Talk to them. Mention that you've got a problem in area X and ask if they know of any good consultants. Chances are that not only will you get some good leads, you'll also learn which consultants to steer away from.

Another source is professional organizations. Write to them and see if they know of specialists in computer performance analysis, telecommunications, computer graphics or whatever your needs are.

Do Your Own Investigation

Finally, investigate the consulting firm yourself. Find out who their major customers are, either by asking the firm for references or through your readings and contacts.

The danger here is that some consultants have close ties with various vendors and might be disposed to recommend a vendor's equipment more out of friendship than objective judgment.

Once you've decided on a consultant, bring in your legal people and draw up a contract. Specific goals and specific time frames are important. The contracts should be for short periods only — say, one or two months.

Inform the consultant that you will review the relationship at the end of that time and either renew the contract or end it, depending upon their ability to provide results within the agreed deadlines.

In this way, you will decrease the consultant's temptation to hand you that old statement every two months, "We're almost there, but..." That tune can go on and on if you aren't specific, careful and firm.

The most important rule of thumb is: If you can't ask the question clearly and specifically, it's not yet time to ask a consultant.

Berardo is a management counselor and career therapist. He is a vice-president with the Meld Group in Newington, Conn., publishers of a monthly newsletter on management development.

HUMAN CONNECTION/Jack Stone

Organizing a Systems Analysis Team: A Neophyte Systems Analyst Is Born

There has been continuing concern among data processing managers about systems analysts — and I mean every aspect of these people, particularly their job responsibilities, communications capabilities and training needs.

Recently I developed a novel approach to the selection of an analyst that is worth discussing.

This event occurred rather serendipitously during the next phase of my dealings with one Ira Schoen, the management analyst from the U.S. International Communications Agency (ICA) who was approaching the challenge of installing a pair of packaged minis in a serious-minded, but rather unknowing way. (His approach to minisystem implementation was consistently contrary to mine, which was a not-so-serious-minded, but always knowing way.)

Ira was dead serious when he called me to help him define the next step after he received confirmation that his machines were on order.

Looking for a Master 'Plan'

At our first meeting to scope the systems effort, he stated that he was looking for a master "plan" for his office automation program. "OK, I've got it," I said. "You want a detailing of the applications development program, a description of the ancillary technical support functions, the approach to and the responsibilities for the documentation and a decent systems acceptance activity." He gave me a short nod and ran away to a meeting.

Several days after I dropped off a masterpiece of technical writing — a veritable poem — (Ira later claimed that it was a classic piece of technical obfuscation), he called to say that I had rather missed the point and that

This is Part 6 of a continuing series on new users learning to cope on the job.

a master "schedule" was what he needed.

"Now it comes to me," I said. "You're asking for a rundown on project tasks, with narrative descriptions, milestones and end products." He waved his right hand and left for a luncheon appointment.

Well, I didn't make it on the second round either, and as Ira dropped my writing creation in the wastebasket, I said, "May I suggest an information system?"

"You've got it!" he cried. "You understand my needs!"

So once again I wrote a proposal for him, and it met the bill because he called me in and asked me if I had any questions as he handed a contract to me. Before I could answer, he noted it was 3:58 p.m., Sept. 30, the last day of the government's fiscal year (after which the funding would expire) and that his car pool left shortly after 4 p.m.

"None that I can think of," I responded somewhat faintly as I reflected on the fixed-price nature of my quotation and he sped off toward his ride. I wondered at the time if this incident were a preview of "things to come" on this project.

To Ira's credit, he was all organized and ready to work the very next day.

"It is necessary to start with the Needs Statement that our Automatic Data Processing Division [ADP] folks developed and begin to detail with our managers and program officers the specifics of our visitor tracking system," he explained.

"As a first step, I want you to visit

all of our division chiefs and branch chiefs and perhaps a dozen of our key program officers. I have arranged for starters — now let's see here — 11 meetings over the next two weeks, starting with three today."

He was well organized, all right, enough to drive me right out of business because I visualized spending the rest of my professional career in meetings, reviews and briefings trying to corral the users long enough to reach basic decisions on data elements for their master file.

I also knew that Ira's directorate was a very complex operation and that if I became knowledgeable about it I would be forever bombarded with questions from Ira after I left.

One of the adages I use for survival in this business is: "When your back's against the wall, think training!" and it really came in handy at the time.

I suggested to Ira that I lead the initial meetings with the top people, but that he should lead the remainder.

"This way," I reasoned, "you will be trained in the details of your user operations and be in a better position to help them define their files. Also, when I leave, you will be able to take over and provide immediate support to your users. What's more, I'll teach you how to become a computer systems analyst."

As Ira pondered the offer, I suspected he wondered what he was paying me for. But he quickly came around to my suggestion for reasons I didn't know, and a neophyte ADP systems analyst was born.

Letters to Stone should be addressed to him at Box 270, 1377 K St., N.W., Washington, D.C. 20005.



Programmed Alternatives

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CW 3/22/82

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LETTERS

Baxter and the IBM Case

The dismissal of the Department of Justice's case against IBM is again in the news because of the recent revelation that William F. Baxter, chief of the Justice Department's Antitrust Division, was employed as a consultant for IBM.

An immediate congressional investigation of Baxter's conduct and his decision to dismiss the case is imperative. An in-depth evaluation of the computer industry today and the issues raised in the government's case cast serious doubt about Baxter's opinion that the government's case lacked merit.

Many of those who applauded the dismissal of the case felt that the government's claim that IBM monopolized the computer industry, however valid it may have been when the case was first filed, had become obsolete because of dramatic changes in the industry in ensuing years.

What they don't realize is that the market that the government charges IBM with monopolizing — the general-purpose digital computer systems — exists as a separate market within the industry today as it did in 1969.

The general-purpose market still represents the largest and most profitable segment of the computer industry. It was recently reported that IBM's present share in that market is still an astonishing 70%, not dramatically different from the share alleged by the government in its 1969 complaint.

To suggest that the entry of hundreds of companies such as Apple, Inc. and Radio Shack represents meaningful competition or a threat to IBM in this market is as absurd as stating that bicycles compete with buses as a form of mass transportation.

Another argument advanced by proponents of IBM's position is that companies like it must be free from the shackles of the antitrust laws if they are to escape the threat of Japanese supertechnology and marketing.

While there's no question that IBM's extremely high profits have made its market a desirable target for eager competitors both domestic and foreign, the Japanese have made no significant inroads into the U.S. general-purpose computer market after more than 10 years of concerted effort. Their share is estimated to be less than 5% according to a recent *Fortune* magazine article.

Furthermore, the dismissal was an affront to American taxpayers who bore the costs of this litigation (estimated at between \$18 and \$26 million).

Most consumers are unaware of the indirect implications of the case's dismissal on their pocketbooks. But the public does pay higher prices when it uses the products and services of IBM's general-purpose computer customers who pass on to consumers the higher prices they are charged by IBM.

Even if Baxter didn't agree with the merits of the government's case, he missed a clear opportunity to protect the best interest of his client, the U.S.

He failed to use the leverage of the pending case as a bargaining tool for the recovery of some of the cost to the taxpayers before agreeing to total dismissal.

The timing of Baxter's decision is another troublesome issue. His announcement to dismiss the case on the eve of its submission for decision deprived U.S. District Court Judge David N. Edelstein, who had presided over the case's six-year trial, of his right and obligation to rule on the merits of the case.

Judge Edelstein, who had been handling the case since 1972, listened to the testimony of more than 75 government and defense witnesses and admitted into evidence over 20,000 documents.

Baxter, who has been a law professor at Stanford University for the last several years, presided over seven "mini-trials," during which the IBM and government trial staffs "retried" the case to acquaint him with the issues.

Finally, Baxter's decision is based on his personal view that IBM engaged in no illegal acts. But his interpretation of Section 2 of the Sherman Antitrust Act is contrary to the current law of the land as interpreted by the Supreme Court in a long line of antitrust cases.

Public confidence in the Antitrust Division's ability to protect competition demands a thorough examination of Baxter's failure to disclose his role as a consultant to IBM and its impact on his dismissal of the government's case.

Joseph J. Tabacco Jr.

Pomerantz Levy Haudek & Block
New York, N.Y.

Puzzling Statements

The information in "Ready-Made Software Passes College Tests" [CW, Feb. 8] cannot be supported by my experience with Management Science America, Inc. (MSA). Having used MSA's payroll system to pay more than 400,000 employees since 1977, I was particularly puzzled by certain statements concerning maintenance support.

In five years we have come to have confidence in MSA's attention to providing timely reports on statutory changes. New enhancement releases have been provided each year just as agreed upon initially, but MSA has supported previous releases for up to several months beyond a new release in our experiences. This time frame was quite sufficient to enable us to implement the new release.

The flexible configurations of the MSA system provide the user the ability to easily execute the system in the user environment. The number of tape drives or the core requirements can be managed differently by each user. McDonnell Douglas Automation Co. has had no problems in this area. Our experience with the MSA software has been positive.

J.E. Christensen
Senior Section Manager
HFC Product Development
Health Services Division
McDonnell Douglas Automation Co.
St. Louis, Mo.

'Shrink' Doubles Storage Capacity

CANOCA PARK, Calif. — Informatics, Inc. has introduced two versions of its Shrink data compression package for IBM DOS/VS and VSE environments. Shrink reportedly can double existing disk and tape storage capacities, with typical data compression of up to 60% to 80%.

Shrink/VSE compresses all standard files on DOS/VS and DOS/VSE systems, Informatics explained. Shrink/DL/1, in addition, is designed to compress DL/1 data bases while providing applications program transparency. Shrink is intended to give users an alternative to acquiring more spindles.

The DOS/VS(E) version of Shrink is available for \$400/mo. The DL/1 version costs \$500/mo from Informatics, 21031 Ventura Blvd., Woodland Hills, Calif. 91364.

'Panvalet' Library Gets ICCF Option

OAK BROOK, Ill. — Pansophic Systems, Inc. has added an IBM Interactive Computing and Control Facility (ICCF) Option to its Panvalet library package.

The PAN command processor reportedly supports the Panvalet library file on any direct access storage device (DASD). The software runs on IBM and plug-compatible mainframes with IBM's ICCF under DOS/VSE Release 2 and above.

The PAN command processor executes concurrently in multiple ICCF pseudo-partitions with support for shared Dasd, Pansophic explained. To execute the PAN command processor, the user enters commands at a terminal during an ICCF session. The Panvalet library resides on a DASD and contains source programs, object programs and job control.

ICCF members may be added to the Panvalet library, the vendor said. There is also a retrieve function that copies a Panvalet library member to an ICCF library member. A standard ICCF library member name, based on the Panvalet member name, is generated. The store function that is provided was designed to replace a Panvalet library member with an ICCF library member.

The vendor claimed that the ICCF Option for Panvalet enables the user to accomplish the former's program development and the latter's source library control simultaneously. The ICCF Option is available immediately, priced at \$3,900, Pansophic said from 709 Enterprise Drive, Oak Brook, Ill. 60521.

Application Design Freed From IMS Architecture

WAITSFIELD, Vt. — A software development package for IBM and plug-compatible mainframe users that is designed to separate both the application programmer and the application program from IBM's IMS and the architecture of the data bases it holds by extending the Cobol data referencing statements was unveiled here by Computing Productivity, Inc.

The Implementation Programmer Productivity Processor (IP3) reportedly extends Cobol with nine nonprocedural data referencing statements that are new verbs that eliminate the conventional IMS state-

ments from the program. The data referencing statements fully conform to Cobol syntax, the vendor said, noting that they are not merely CALL protocols for IMS I/O modules.

IP3 is said to provide IMS and data base architecture independence for both the program and the programmer. The vendor explained that it has virtually no presence in the run-time system. IP3 reportedly can generate code that is at least as efficient as that produced by the programmer writing in native IMS.

The software, therefore, separates data base maintenance from the application, the vendor continued, noting that the application program rarely needs to be recompiled.

No installation software must be modified for the use of IP3, according to the vendor. The operating system, IMS and the Cobol compiler are not changed in any way.

The base price for IP3 is \$25,000. The software is available on a 30-day free trial from the vendor at The Larrow House, Rt. 1-433-A, Waitsfield, Vt. 05673.

'ADR/Datacom' Gets Updates

PRINCETON, N.J. — Applied Data Research, Inc. (ADR) has added new and expanded interproduct components to its ADR/Datacom software to provide a more consistent and compatible environment for its users.

The new interproduct components that support what ADR is calling the relational information management environment are Datadictionary Service Facility (DSF), Panel Definition Facility (PDF) and Panel Management Services (PMS). DSF is said to provide definition of all ADR/Datacom System products that interact with the ADR/Datadictionary. It makes the latter the control point for data definitions and data base related information on the program, application development and telecommunications network environments.

PDF is described by the vendor as an interactive facility for creating, maintaining and processing panels or screen formats for ADR/Datacom System-developed application programs. PMS is intended to acquire, send, format and edit panels used by ADR/Datacom System-developed programs.

The other interproduct components that

NCSS Nomad2 Receives Graphics

WILTON, Conn. — National CSS, Inc. (NCSS) has added a fully integrated graphics facility to its Nomad2 data base management system, which is available on its time-sharing network.

The feature allows users to depict information directly from the data base in bar charts, pie charts, line plots and scattergrams, NCSS said. Users reportedly can report, graph, perform statistical analysis and update data in one environment without transferring data.

Graphics output may be on a CRT, a printer terminal or a graphics terminal. NCSS branch offices have high-speed, high-resolution color graphics plotters available for users as well, according to the vendor.

Costs are on an as-used basis on the NCSS remote computer services network. NCSS is headquartered at 187 Danbury Road, Wilton, Conn. 06897.

'Wylbur' Update Adds Qwik Files

SAN FRANCISCO — Wylbur 6.0, an enhanced version of its program development package for IBM and plug-compatible mainframe users, was announced here by OBS Software, a division of On-Line Business Systems, Inc.

Wylbur is described by the vendor as an alternative to IBM's TSO. Its enhanced version includes a Full Screen Formatting option designed to enable users to develop and implement on-line interactive applications. Another option is Qwik Files, which reportedly allows users access to multiple active files simultaneously.

(Continued on Page 42)

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Automated Scheduling Package Introduced

ARLINGTON, Texas — An automated scheduling and dispatching package called Zeke-The Controller was announced here by Southwest Software Services, Inc. for users of IBM DOS/VSE and VSE/Power systems.

Zeke-The Controller is said to schedule as many as 24 different computer systems and work centers from its direct-access storage device resident catalog of user-defined events.

Up to 26 different calendars for scheduling purposes are included with the package, the vendor said, and each event is associated with one of these calendars.

Systems events reportedly are automatically dispatched by Zeke-The Controller when the event is due for dispatching and all established prerequisites for the event have been satisfied, the vendor said.

When dispatching job

events, the software package is designed to ensure that necessary disk volumes are mounted, the required number of tape drives is available and the memory requirements of the job can be met prior to dispatching it for processing.

A permanent license for Zeke-The Controller is available for \$10,500 from Southwest Software Services at 3602 E. Randol Mill Road, Arlington, Texas 76011.

'ADR/Datacom' Out

(Continued from Page 41)
have been expanded in function are the Virtual Processing Environment (VPE) and Session Control Facility (SCF). VPE reportedly is now fully implemented in all environments supported by the ADR/Datacom software. SCF is said to enable the ADR/Datacom dictionary and ADR/Ideal to be available on the same terminal.

ADR/Datacom consists of eight new versions of exist-

ing products, two yet-to-be-released products and five interproduct components. These are available on IBM and plug-compatible mainframes running under SXX/VS(E), DOS/VS(E), OS/VS1 and MVS.

Datacom/D-Net 1.0, a distributed data processing package for information management and data base control in a network of computers, is expected to be available in the third quarter. ADR/Ideal 1.0, an application development and execution package, reportedly will be available later in 1982.

The new and expanded interproduct components are available at no extra charge for current users of the ADR/Datacom software. Otherwise, the price for the ADR/Datacom package, excluding Datacom/D-Net and ADR/Ideal, ranges from \$140,000 to \$235,000, the vendor said.

ADR is headquartered at Rt. 206 & Orchard Road, CN-8, Princeton, N.J. 08540.

'Wylbur' Gets Qwik Files

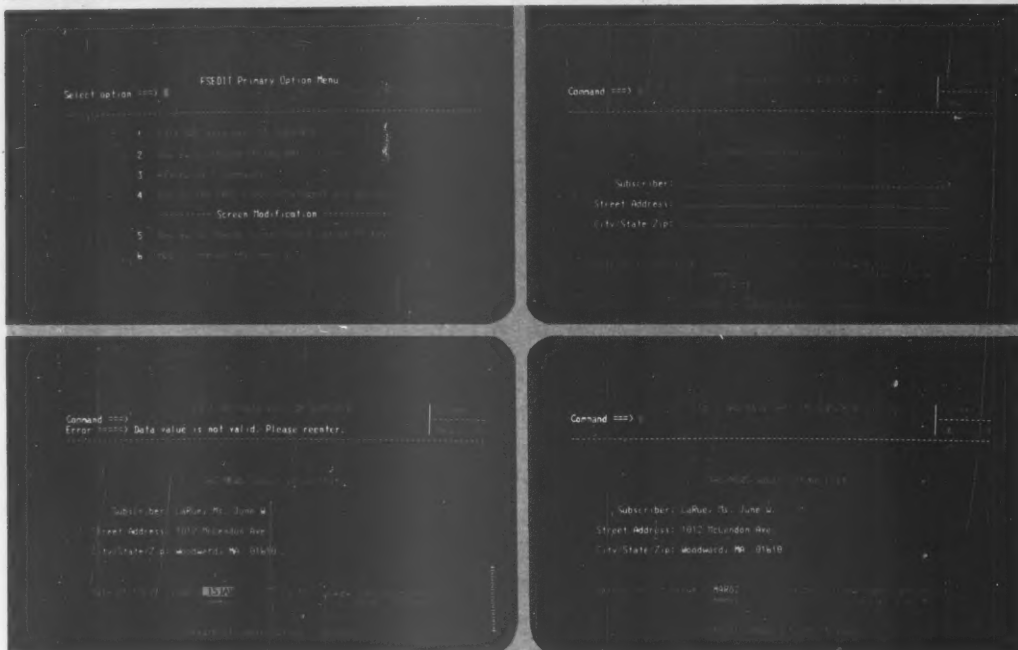
(Continued from Page 41)
Other key features include a stacked command capability to reduce terminal I/O and additions to Wylbur's Exec interactive programming language, such as branching logic to support labels and an extended number of global, string and numeric variables, the vendor said.

Wylbur 6.0 also features job management commands that enables users to submit and control their own jobs in the operating system and document formatting, according to the vendor. Wylbur 6.0 is said to support all IBM OS operating systems.

The software is available immediately and the cost of a perpetual license for Wylbur 6.0 is \$25,000 for an IBM MVS version and \$22,500 for IBM VS1, SVS, MFT and MVT versions. Both the Screen Formatting and Qwik Files options are priced at \$2,875 each. Other options are priced as follows: Vtam Interface (\$5,750), JES3 Interface (\$2,875), ACF2 Interface (\$1,725), Operating System Upgrade (\$3,500) and an On-Line Tutorial for Wylbur Training (\$1,150 basic; \$5,750 advanced).

Maintenance is free for the first year under the license and 15% of the then-current license fee/year thereafter. Installation is \$1,150, the vendor said.

The vendor is located at 115 Sansome St., San Francisco, Calif. 94104.



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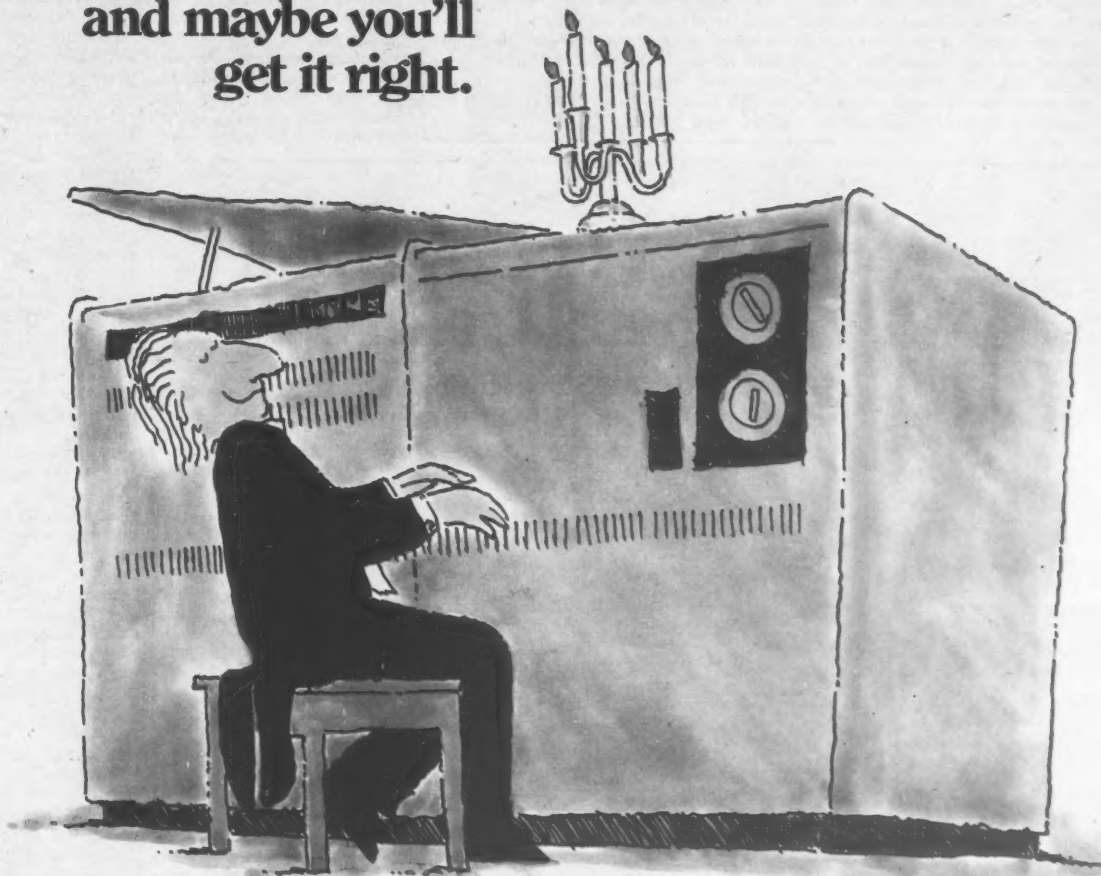


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CW 0382

Package Targets IBM 4300, 3033 Users

NEW YORK — Interactive Logic, Inc. has introduced the Scheduling and Resource Management System (SRMS), which it describes as an interactive decision support package for users of IBM 4300 and 3033 systems.

SRMS's data base design features an interactive command language and three modes of operation. It is based on a relational data base model. It monitors projects and shows resource constraints.

The package supports precedence networks. An unlimited system calendar is provided, and an unlimited multiple re-

source calendar may be defined, the vendor said.

SRMS has a project tracking facility and a comprehensive history component. Detailed cost accounting and budget calculations can be handled at all levels, the vendor said.

Applications include engineering, software development, manufacturing, construction, government, product development and research and development. It is available for \$46,200 from Interactive Logic, 645 Madison Ave., New York, N.Y. 10022.

Release 2.0 of DYL-280 Speeds Report Writing

GRANADA HILLS, Calif. — Release 2.0 of DYL-280, Dylakor Inc.'s free-form report writer/utility package for IBM and plug-compatible mainframes running under OS, DOS and CMS was unveiled here.

Multiple report-writing capabilities have been added to DYL-280's report writer, the vendor said, allowing up to 999 different reports per ex-

ecution. Reports automatically are composed to programmer specifications via DYL-280's composition, control breaking, sorting, totaling and titling features.

With Release 2.0, DYL-280 reportedly can process an unlimited number of sequential input and output files. The software also provides an automatic interface to any user-supplied I/O modules. In addition, a MODIFY function has been implemented to allow for automatic data manipulation following the input cycle or prior to the output cycle.

DYL-280's ability to manipulate data has been enhanced with the implementation of an EDIT and TRANSLATE feature. User-defined edit masks and DYL-280 edit codes are said to provide an unlimited range of editing options.

Enhancements to DYL-280's COPY facility provide an automatic interface to Applied Data Research, Inc.'s Librarian; Pansophic Systems, Inc.'s Panvalet; and Phoenix Computer Corp.'s Condor software packages, according to Dylakor. All COPY capabilities are said to be available for the non-IBM library facilities. The new IBM 3375 disks are fully supported with Release 2.0 of DYL-280.

Release 2.0 of DYL-280 will be sent free of charge to current DYL-280 users. Otherwise, it is priced at \$1,680/year on a three-year lease, the vendor said from 17418 Chatsworth St., Granada Hills, Calif. 91344.

'F-Scan' Aimed At NCR Users

CINCINNATI — Computer Programs & Systems, Inc. has announced F-Scan, a file analysis package for users of NCR Corp.'s Imos II and IRX operating systems.

The package analyzes space requirements for files and warns of situations that might result in file-full conditions, the vendor said.

The package costs \$495 and is available through The Software Clearing House, 771 Neeb Road, Cincinnati, Ohio 45238.

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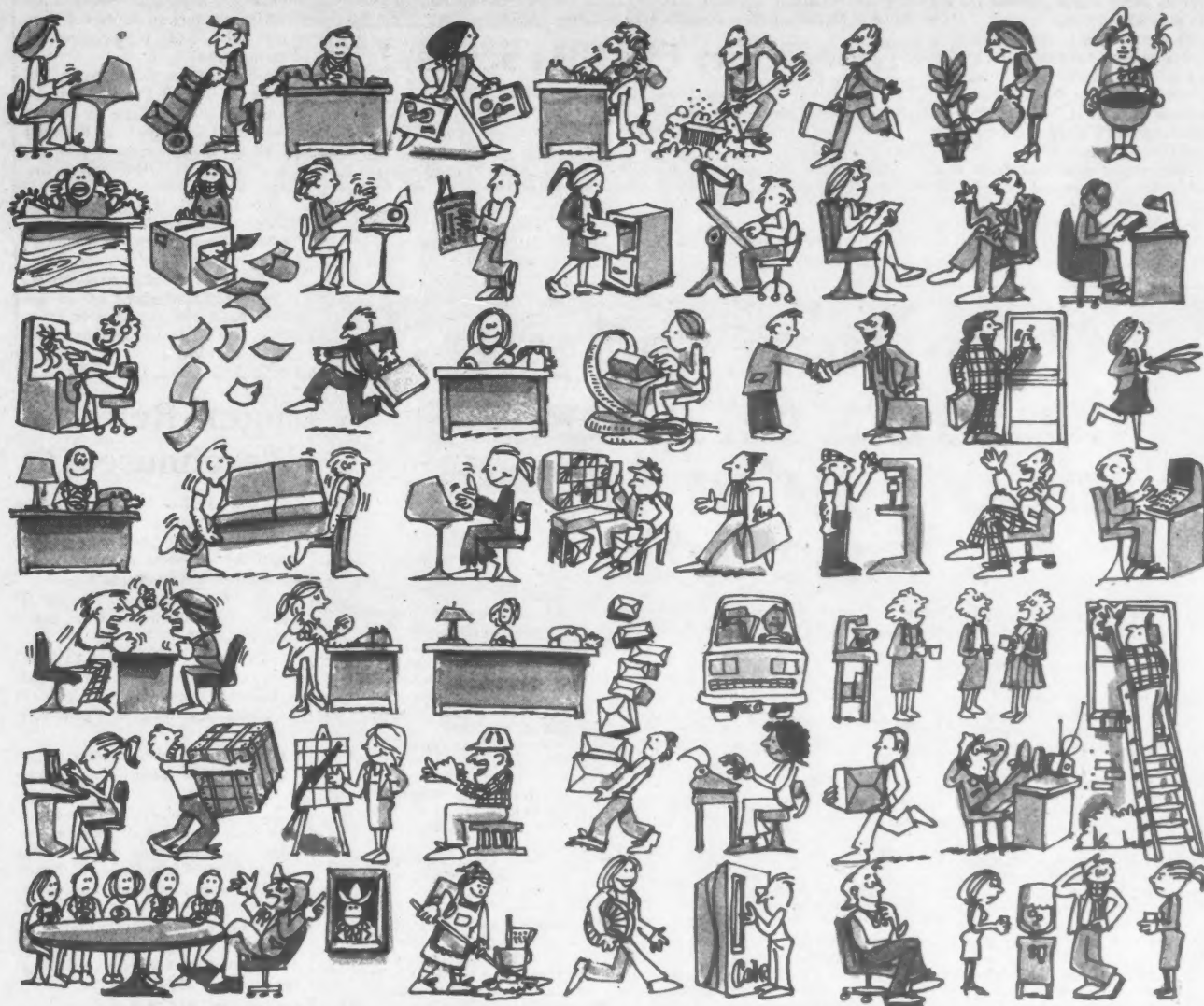
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USI Enhances 'Cams,' 'Psam'

BROOKFIELD, Conn. — Universal Software, Inc. (USI) announced several enhancements to its IBM CICS Accounting and Monitoring System (Cams) and IBM 3375 disk support for its Psam access method for IBM DOS/VS(E) systems.

Version 1.2 of Cams is said to include support for IBM DOS/VSE Release 3, support for CICS Release 1.5, ability to monitor IBM 7770 audio response terminals, support for IBM 3310 and 3370 disks and support for the USI report writer.

The vendor described Psam as an alternative to Isam and Vsam for IBM DOS/VS(E) users. The software's IBM 3375 disk support reportedly enables files loaded onto 3375 disks to be automatically blocked to optimize

direct access storage device utilization.

User programs do not have to be changed to reflect the new disk device type, according to the vendor.

Psam is said to support IBM 3310 and 3370 disks in native mode.

Tape Utility Fits IBM Series/1

VAN NUYS, Calif. — A tape utility software package for the IBM Series/1 is available from Applied Computer Services, Inc.

The D2T2D package contains utility programs and a set of user-callable subroutines. Programs are said to allow entire disks, selected volumes, data sets or members to be copied between disk and tape.

Version 1.2 of the Cams software rents for \$110/mo and the Psam with IBM 3375 disk support is available for \$425/mo. Free in-house evaluations are available for both from USI, Brookfield Office Park, Brookfield, Conn. 06804.

Subroutines are callable from assembler language, Fortran, Cobol or PL/I and support fixed-length, blocked or unblocked records. D2T2D runs under RPS Version 5.0 or later and requires tape subsystem support. The software costs \$875 from Applied Computer Services at Suite 160, 16600 Sherman Way, Van Nuys, Calif. 91406.

UCC Offers Release 2.5 Of 'UCC Seven'

DALLAS — University Computing Co. (UCC) has announced Release 2.5 of its UCC Seven automated production control system for IBM and plug-compatible mainframes.

Enhancements available in Release 2.5 include the ability to allow the OS-Cvol-type of catalog for the UCC Seven to be replaced with an IBM Vsam data index set. The vendor said this option improves performance.

Also included is support for IBM 3375 and 3380 disk drives, an updated interface to UCC's rerun/restart management system, UCC Eleven and revised Vtam modules.

Release 2.5 is billed on an as-needed basis, the vendor said from UCC Tower, Exchange Park, Dallas, Texas 75235.

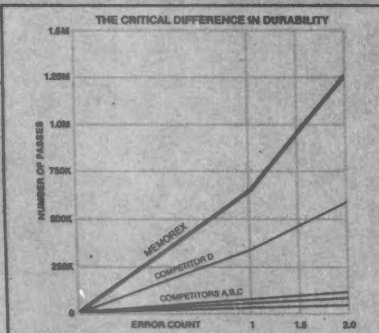
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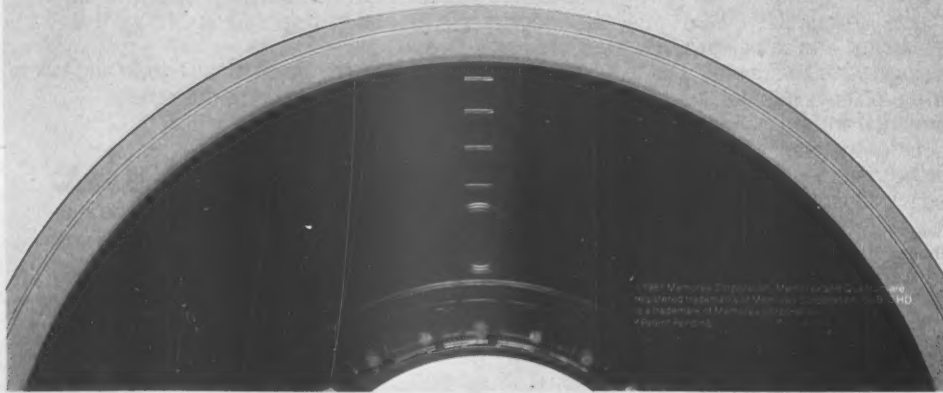
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Sigma Releases Warehouse Aid

MINNEAPOLIS — A warehouse labor-control software program designed to point out productivity problems has been introduced here by Sigma Software Systems.

Sigma reportedly works with almost any standard system using Ansi-74 Cobol.

The system could be used by warehouse operators to determine specific layout, equipment and personnel problems, according to Sigma Software.

Management would be able to allocate warehouse labor costs by product, department or division.

The program works with assembly line components, maintenance supplies, manufacturing parts, drugs and pharmaceuticals, hardware, clothing, soft goods, food and industrial equipment, the vendor said.

Cost of the complete program is \$15,000 from Sigma Software Systems, 1006 City View Drive, Minneapolis, Minn. 55343.

'Bev-Pak' Aids DEC Mini Users

WOBURN, Mass. — Turnkey Distribution Systems, Inc. has introduced a computerized distribution management package for use by liquor, wine and beer distributors, distillers, rectifiers and importers.

Depending on the number of orders processed, the Turn-Key Bev-Pak uses the Digital Equipment Corp. PDP-11 or VAX systems, the vendor said.

It reportedly provides order entry, inventory control, accounts receivable, marketing and business trend analysis and report generation.

Use of hand-held order-entry terminals by sales representatives in the field insures timely order processing while reducing phone line and personnel costs, the vendor reported.

The package is available for \$30,000 from Turnkey Distribution Systems, 82 Cummings Park, Woburn, Mass. 01801.

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Utility Package Offered For IBM OS Environments

ATLANTA — NCI, Inc. has announced a data retrieval utility package for IBM OS environments. Currently called the No-Name Software package, the vendor is offering a free Radio Shack TRS-80 Model III personal computer to the entrant that submits a name that best describes the product's functions.

The package provides the means for users to selectively retrieve data from any type of input file. This selection may be based on record position within a file or data content.

The output of these selections can be on any type of output device and can use any access method supported by OS including Isam, Vsam, Bpam,

Bdam and Qsam, according to NCI.

No-Name costs \$7,500, NCI said from 3720 Longview Drive, Atlanta, Ga. 30341.

Geometric Modeling Software Out

ARLINGTON, Texas — Computer Manufacturing-International, Inc. (CAM-I) has introduced the Technical Information Processing System (Tips-1) geometric modeling software.

The software runs on an IBM 370/168 or equivalent mainframe and a Tektronix, Inc. 4041 or similar graphics terminal.

Tips-1 is said to serve as both a geo-

metric modeler of mechanical parts and as a system for conceptualizing engineering applications. It is written primarily in Fortran and offers three groups of applications routines: graphics, design analysis and manufacturing, the vendor said.

Tips-1 costs \$1,000 from CAM-I, Library Coordinator, Suite 1107, 611 Ryan Plaza Drive, Arlington, Texas 76011.

Accounts Payable Package Fits System/34 Processors

here by Design Strategy Corp.

The software is said to integrate file information for both the Vtoc and Vsam catalog for all on-line volumes and catalogs. The information is provided alphabetically for all files in the system, by volume and by catalog. Available free space is summarized for the entire system and detailed by individual volume.

For users of the Vsam space management feature, the package provides detailed information on the utilization and current age of all dynamically allocated SAM files, the vendor said.

The package reportedly uses its own access method to retrieve file information for both the Vtoc and the Vsam catalogs and dynamically allocates the devices.

The Dasd inventory and allocation reporting package is available for \$1,350 on a fixed term lease or at \$75/mo for 24 months from Design Strategy, 345 E. 81 St., New York, N.Y. 10028.

Package Aids Fuel Surcharge

DEDHAM, Mass. — Logistics Systems has announced a software package for fuel surcharge reporting.

CompuGuide reportedly enables users of IBM and plug-compatible mainframes, as well as those using Prime Computer, Inc., Perkin Elmer Corp. and Hewlett-Packard Co. equipment, to access accurate point-to-point mileages between thousands of places in the continental U.S. and Canada. According to the vendor, these mileages can be an important component of computerized mileage-based tariffs, can solve the clerical problem of determining fuel surcharge miles and can calculate driver pay.

CompuGuide can either be installed on a company's own computer or accessed via national time-sharing. The program can be rented for \$1,200/mo, or purchased for a one-time fee of \$50,000, the vendor said from 990 Washington St., Dedham, Mass. 02026.

'Check+' Unveiled For System/34s

DANVILLE, Calif. — P. Loch Associates has announced Check+, an on-line accounts payable retrieval package for IBM System/34 processors.

The package was designed for users of IBM's Manufacturing Accounting and Production Information System (Mapics) or Distribution Finance Accounting System (Dfias) II accounts payable program products. Check+ provides a check-history file and the ability to select check-history information based on vendor, company, check, invoice number, a range of check dates or any combination thereof, according to the vendor.

The package costs \$495 with an optional annual maintenance fee of \$75, the vendor said from Suite 200, 181 Emmons Canyon Lane, Danville, Calif. 94526.

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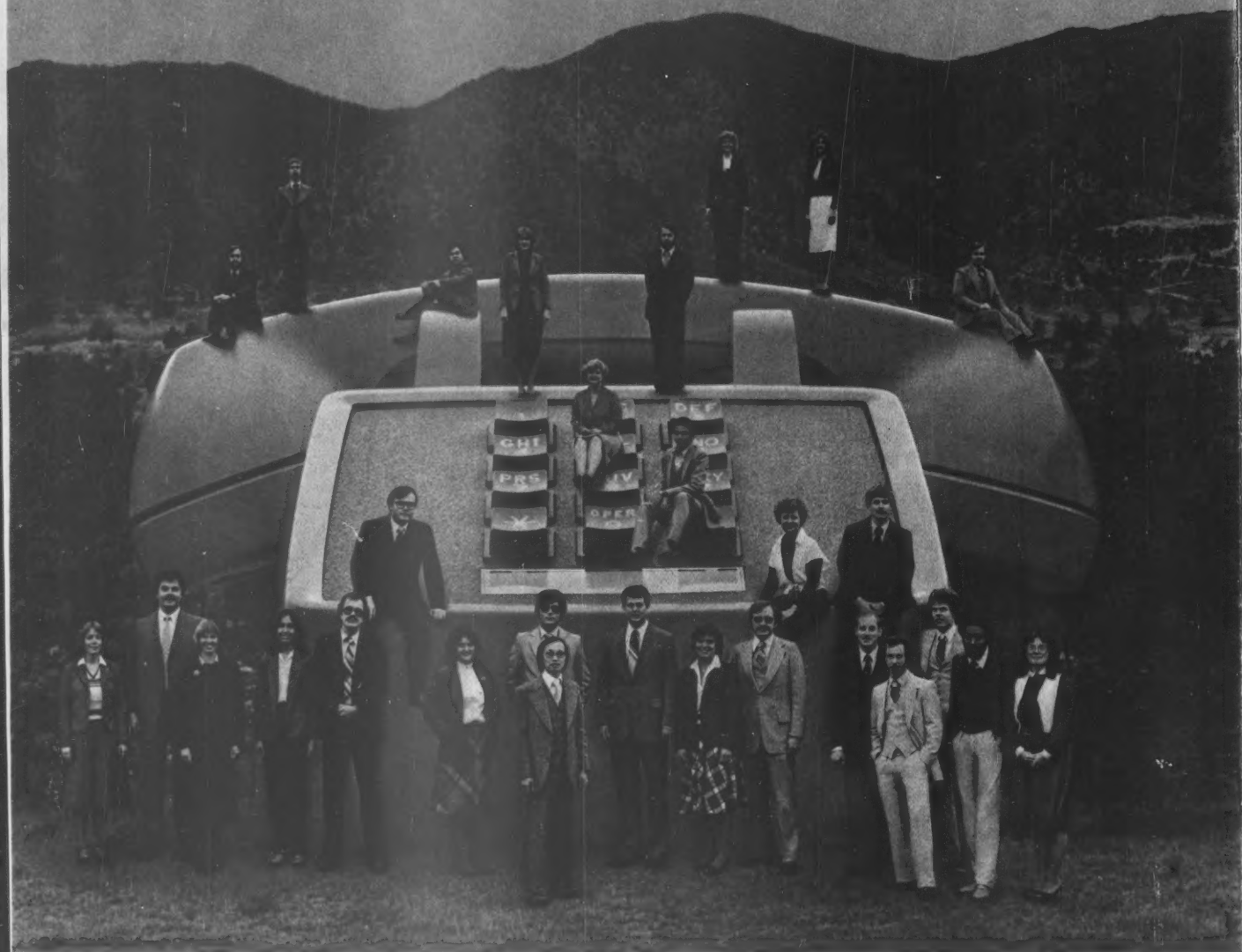
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'Dumpit' Offers Macro-11 Code

SANTA MONICA, Calif. — Infinity Software Corp. has introduced Version 3 of Dumpit, a general-purpose file dump utility for the Digital Equipment Corp. PDP-11. It features Macro-11 code that reportedly offers twice the speed of the previous version.

It also now offers support for large files, detection of duplicate lines of output and a user-friendly interface, the vendor said.

The company has also introduced a block mode simulation data entry subroutine, Entry, which is written explicitly to converse with DEC VT-100-like terminals, the vendor said. Some features of Entry are minimum character output, field as definition string, integer or floating point, right or left filling with any character, recognition of programmable function keys and various field editing.

Dumpit and Entry are available for \$500 each from Infinity Software Corp., Suite 801, 2210 Wilshire Blvd., Santa Monica, Calif. 90403.

'BCP,' 'MCS' Fit Prime Series 50

ROSEMONT, Ill. — Systems Management, Inc. has introduced two software packages for the Prime Computer, Inc. Series 50: the Business Control Programs (BCP) and the Manufacturing Control System (MCS).

BCP consists of 10 applications that perform the following business functions: inventory/costing, order entry, billing accounts receivable, sales analysis, purchase order, accounts payable, payroll/labor distribution, direct mail and general ledger, the vendor said.

MCS consists of nine applications for planning, monitoring and controlling manufacturing operations: bill of material, inventory control, on order (master schedule), cost control, routing, work in progress, material requirements planning, capacity planning and input/output control, the vendor said.

The applications in each package can be used separately on a stand-alone basis or together as the two packages interface completely, the vendor said.

BCP is available for \$39,000 and MCS for \$54,500 from Systems Management, 10400 W. Higgins Road, Rosemont, Ill. 60018.

Data Extraction Tool Out For HP 3000 Line

RESTON, Va. — Software Design Associates has announced DBplus, an interactive data extraction and reformatting utility for use with the Hewlett-Packard Co. Image data base management system.

Designed for use with the HP 3000 line of processors, the package copies Image data set entries to and from sequential files as well as directly between data bases, according to the vendor.

The package costs \$2,000, the vendor said from Suite 300, 11260 Roger Bacon Drive, Reston, Va. 22090.

Under RSTS/E, Vax

Accounting Package Runs on PDP-11s

BELMONT, Mass. — An asset accounting package designed to run on Digital Equipment Corp. PDP-11 computers running under RSTS/E and VAX systems was released here by Interactive Management Systems, Inc.

The Fixed Asset Accounting System was created to keep track of all depreciable and nondepreciable assets, the vendor said. The package was designed to meet fixed-asset requirements as well as to conform to current accounting practices of a wide variety of companies.

The package includes current tax legislation, including the Economic Recovery Tax Act of 1981 and the maximum number of options in as-

signing depreciation methods. It is said to process eight different depreciation methods, including sum of the years' digits method; 125%, 150% and 200% declining balance; unit of production method; and straight-line

depreciation.

The package costs \$10,000; there is a 20% surcharge for source code. Interactive Management Systems is located at 375 Concord Ave., Belmont, Mass. 02178.

'Pride' ASDM Gets JCL Generator

CINCINNATI — M. Bryce & Associates, Inc. has added a JCL statement generator to its Pride Automated Systems Design Methodology (ASDM).

The generator can be used to prepare IBM OS and DOS JCL and control statements for Honeywell, Inc. Gcos; Hewlett-Packard Co. HP 3000; Digital Equipment Corp. Decsystem-

10; Decsystem-20 and VAX; Data General Corp. AOS; Sperry Univac 1100 Exec Series; Control Data Corp. NOS; and Burroughs Corp. systems. Pride ASDM is available in more than 20 hardware/software configurations and costs \$80,000.

M. Bryce & Associates is at 1248 Springfield Pike, Cincinnati, Ohio 45215.

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*** ABEND - AID DIAGNOSTICS ***

JOB- XJALSAM1 STEP- STEP1 COMPLETION CODE U0295

*****
THE NEXT SEQUENTIAL INSTRUCTION TO BE EXECUTED IN PROGRAM
PRACCTG WAS AT DISPLACEMENT 001FIC.

THE PROGRAM WAS COMPILED ON 08/13/79 AND IS 002286 BYTES LONG.

IT IS PART OF LOAD MODULE PRACCTG.
THE MODULE WAS LOADED FROM JOBLIB LIBRARY TOMARK.LOAD
IT WAS LINK EDITED ON 10/02/79 AND IS 004688 BYTES LONG.

*****

THE IBM COBOL U0295 ABEND IS ISSUED WHEN AN ERROR
HAS BEEN DETECTED BY THE SUBROUTINES PERFORMING I/O
OPERATIONS.

THREE DIFFERENT FILE STATUS CODES ARE POSSIBLE
1. 90-NO FURTHER INFORMATION
2. 91-PASSWORD FAILURE
3. 92-LOGIC ERROR

FILE STATUS CODE RETURNED WAS 92.

I/O INSTRUCTION ISSUED AGAINST
DDNAME INFILE3 WHICH HAS BEEN
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CW-11

Program Generator Runs on DG Systems

THORNWOOD, N.Y. — An interactive program generator designed for Data General Corp. systems running under AOS, AOS/VS, DOS, MP/OS and Rdos and incorporating a data base management system is available from Exact Systems and Programming Corp.

Screengyn is said to allow rapid creation of screens/transactions through a programming-by-menu concept that is understandable by nonprogrammers. Use of the keyboard and generator permits intermixing screen "picture," applications logic and inclusion of literals and pic-

tures of fields at any position on the screen, the vendor said.

The material entered in the literal, field control and procedure modes is directly made part of the generated Screenprogram, which may operate on multiple terminals simultaneously. By means of menu selection the user is led through the construction of all logic statements, the vendor explained.

The package costs between \$7,000 and \$22,000, depending on configuration, from Exact Systems, P.O. Box 115, Thornwood, N.Y. 10594.

Dialog's TS Network Gets Dun & Bradstreet Add-Ons

PALO ALTO, Calif. — Dialog Information Services, Inc. has announced the addition of Million Dollar Directory and Dun & Bradstreet's Market Identifiers data bases from Dun's Marketing Services to its time-sharing network.

The data bases provide information to identify potential targets for marketing programs, a Dialog spokesman said. The Million Dollar Directory offers information on 120,000 U.S. companies

with net worth in excess of \$500,000. Company data includes names of top executives, annual sales figures, number of employees and corporate relationships, according to a Dialog spokesman.

Dun's Marketing Identifiers contain similar information with breakdown by lines of business on more than one million establishments with at least 10 employees.

Access to the Dun & Bradstreet data bases via Dialog's time-sharing network is available on a contract basis. Inquiries about the data bases should be addressed to the Marketing Department, Dialog Information Services, Inc., 3460 Hillview, Palo Alto, Calif. 94304.

TS Package Monitors Status Of School Loans

TORRANCE, Calif. — An on-line software package to help colleges and universities maintain current information on student loan applicants' financial status is available from the Academic Financial Services Association (Afsa).

The package is available on a time-sharing basis.

Communicating Management Data (Command) is intended for use by colleges and universities using National Direct Student Loan and other related student-loan portfolio management, a spokesman said.

The package provides college officials with current information on a student's fiscal status, an Afsa spokesman said. Command can be used by either large or small institutions, according to Afsa. Schools with heavy student loan work loads can access Command from on-site.

Costs for using Command vary depending on the number of student loans in the school's account, according to an Afsa spokesman.

Afsa is located at 23800 Hawthorne Blvd., Torrance, Calif. 90505.

Medical Tool Fits Datamaster

LOUISVILLE, Ky. — A medical software package that runs on the IBM Datamaster computer and manages billing and receivables is available from Infosystems Design Corp.

Medpac/23 is a menu-driven system that individual physicians can customize for their practices. Prompts provided on the screen make the system easily understandable for non-DP people, the vendor claimed.

Medpac/23 prints a detailed day sheet, detailed statements, aged accounts receivable reports, insurance claims to file and also a detailed procedure and diagnosis analysis to assist in evaluating the practice, according to the vendor. It has built-in backup procedures.

The software package costs \$5,200.

Infosystems is located at 4229 Bardstown Road, Louisville, Ky. 40218.

Enhanced 'Template' Runs on 32-Bit Systems

SAN DIEGO, Calif. — A second version of Megatek Corp.'s Template device-independent software package was introduced here for use on computer graphics devices. Written in Ansi standard Fortran, it can be executed on any 32-bit or larger computer supporting a standard Fortran compiler, the vendor said.

New copy functions, computer-independent metafile enhancements, a configuration file function and device-driver model enhancements were added to the package, the vendor said.

The package is said to have more than 200 commands for creating, manipulating, displaying and recording two-dimensional and three-dimensional graphics images. It contains routines for creating geometric figures such as arcs, conic sections, circles, rectangles and polygons, according to the vendor. Data can be displayed as bar

charts, histograms, pie charts or scatter diagrams with one Fortran call.

Additional copy functions are said to allow graphical images to be stored either in an attribute neutral format (archive mode) or with attributes set at time of copy execution (snapshot mode).

Priced at \$25,000, the package includes on-site installation, training, a full year's maintenance, access to Megatek's hot-line support and full-device driver support.

Megatek is located at 3931 Sorrento Valley Blvd., San Diego, Calif. 92121.

Employee Benefit Service Covers New Provisions

ANN ARBOR, Mich. — Comshare, Inc. has expanded its employee benefit record-keeping time-sharing service to cover new provisions of the 1981 Economic Recovery

Act. Also included are services affecting individual retirement accounts (IRA), payroll-based tax-reduction stock-ownership plans (Pay-sop) and incentive stock option plans (Isop).

The IRA Standard package allows banks to offer clients the new open-ended certificate of deposit and up to five alternative investment options, the vendor explained.

The package accepts data from payroll tapes, handles all the complex record keeping required for the IRAs and produces participant reports in either standard or custom formats.

Comshare's Paysop system reportedly allows corporations to offer plans based on payroll rather than investment credits. The package tracks employer and employee funds and maintains the 84-month maturation period. It can also be used to administer hybrids such as thrift or profit sharing, according to the vendor.

The Isop package has been updated to accommodate the liberalization of the tax treatment of the option price for incentive stock option plans. Comshare's pricing system is based on a per-participant basis. Monthly pricing starts at \$1/person and drops to 58 cent/person when there are 500 participants, the firm said.

Comshare can be contacted at 3001 S. State St., Ann Arbor, Mich. 48106.

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Comshare can be contacted at 3001 S. State St., Ann Arbor, Mich. 48106.



'You Have to Submit a Resume.'

Guidelines Direct Software Acquisition

NEW YORK — A methodology for directing software package selection and acquisition was introduced here by The Productivity Group, Inc.

The Software Evaluation Guidelines are designed to provide the standards required for planning, conducting, controlling and documenting a software evaluation effort.

The Guidelines reportedly are structured to complement the systems development methodology currently in place (or planned) within an organization.

They are said to present the software evaluation process

in five logical phases, which include study initiation to determine user requirements, preliminary evaluation to perform the make vs. buy analysis and determine major contenders, operational performance evaluation to determine how the product performs in an operating environment, interfacing with other systems and selection and installation.

The Software Evaluation Guidelines consist of 150 pages of descriptive narrative; detail checklists with completion procedures; forms for planning, rating and analysis; questions to ask; points to consider; and illustrative examples.

In addition, there is a planning section that provides estimating factors for all tasks and activities in the evaluation to assist in determining time and personnel required, the vendor explained.

The guidelines are available for \$150, with additional copies available at \$35 each. They also can be purchased on a Wang Laboratories, Inc. 8-in. floppy disk, the vendor said.

The vendor is located at Suite 1140, 373 Fifth Ave., New York, N.Y. 10016.

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DDA Software Package Bows For System/34-Type Systems

BETHESDA, Md. — Computer Based Solutions Inc. (CBSI) has introduced the Cash Management System, a demand-deposit accounting (DDA) software package for IBM System/34-type systems.

Each day the package sweeps the excess of a predetermined collected balance.

That amount is then invested in a repurchase agreement, which earns an interest rate of 1% below the current money market rate, at the close of the business day, the vendor said. The next business day, the invested amount is redeposited to the customer's DDA account.

Earned interest is credited to the DDA account on the first of each month. This process is repeated each day whenever there are surplus funds in the account.

If Balance Drops

If the balance drops below the predetermined amount, no repurchase will be made, the vendor said.

The Cash Management System works in conjunction with the CBSI Investments Portfolio Accounting System. The five-year lease for both is \$8,000 from CBSI, Suite 603 E., 7315 Wisconsin Ave., Bethesda, Md. 20814.

'Prophet' Analyzes Services For Finance Firms

DALLAS, Texas — Hogan Systems, Inc. has announced Prophet, a package for users of IBM and plug-compatible systems that was designed to allow financial institutions to analyze and price services to groups, branches, responsibility centers and marketing segments.

Prophet is said to be an integration of two Hogan packages, the Customer Information System and the Relationship and Product Management package, both of which allow user banks to move from an account base to a customer base. For example, the package can avoid a situation where a customer is asked for a credit reference when he has \$30,000 in the

bank, the vendor said.

The package costs between \$150,000 and \$250,000, depending on the configuration. Prophet runs on systems that use IBM 370-era software, the vendor said from 14951 Dallas N. Pkwy., Dallas, Texas 75240.

Aims Uses 'Fist' To Aid Design

CHICAGO — IIT Research Institute has announced a Flexible Integrated Simulation Tool (Fist) for members of Automated Integrated Manufacturing Systems (Aims), an organization dedicated to developing computer aids for planning.

Available only to Aims members, Fist is a simulation tool or methodology for designing and evaluating integrated manufacturing systems. To use the system, the user must describe the manufacturing system, and Fist tells the user how well the system will produce the products, what equipment, space or operators are underutilized and where potential bottlenecks might occur, the firm said.

The entrance fee to Aims is \$25,000 with an annual renewal fee of \$8,500. Associate participation membership in the organization costs \$10,000 with an annual renewal fee of \$3,500, the organization said from 10 W. 35 St., Chicago, Ill. 60616.

Vertical Packages Bow for Datamaster

EDINA, Minn. — Tailored Data, Inc. has announced three vertical packages for IBM's System/23 Datamaster: Country Club Billing, Comprehensive Clinic Management and a Manufacturer's Representative package.

Country Club Billing processes charges and receipts while maintaining records for club members, the vendor said. It costs \$2,100.

The Comprehensive Clinic Management package was designed to manage clinic operations. Areas covered include billing, insurance, accounts receivable, patient data inquiries, procedural analysis and management. The package costs \$5,800.

The Manager's Representative package reportedly features purchase-order tracking and customer mailing. It costs \$4,800, Tailored Data said from 4940 Viking Drive, Edina, Minn. 55435.

PMS Fits System/23, Handles 5,000 Units

DEARBORN, Mich. — A property management software system designed to run on IBM's System/23 Datamaster has been announced by Vector Systems, Inc.

The Property Management System (PMS) is said to handle all types of properties and reportedly performs the functions for up to 5,000 units: posting rent and other periodic and one-time charges. PMS costs \$3,000 from Vector Systems, 15700 Woodland Drive, Dearborn, Mich. 48120.



Read All About It In Computerworld's Special Report, "Increasing People Productivity"

The rapid growth of computer technology continues unabated, and people in the DP/MIS industry need to grow with it.

In our April 26 Special Report, edited by Marcia Blumenthal, we will take a look at the different options available for increasing people productivity — from technical to organizational. On the technical side, you'll read about the use of nonprocedural languages and how to get a more rigor-

ous design for information systems. And on the organizational side you'll learn how MIS executives are incorporating psychology with technology to increase productivity. There's a lot of interest in programs for training, motivation, and aligning the DP department's goals with those of the company.

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both your personal productivity and that of your employees'. You'll get all the answers from the most up-to-date information.

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Encryption Tool Fits Fortran-Based Systems

OAKLAND, Calif. — Prime Factors has introduced a data encryption software package that it said runs on virtually any computer with a For-

tran compiler.

Descript/FS is described as a complete set of source routines for the implementation of the National Bu-

reau of Standard's Data Encryption Standard.

It was designed for users who do not have the strict timing standards required by an assembler implementation, but have the need for a block ciphering algorithm, the vendor said.

Delivered source code is completely documented and includes definition of all variables and procedures, according to the vendor. Accompanying the code is a manual describing the data encryption standard algorithm, its modes of implementation and sections on proper key management and generation.

The listings and manual are available for a one-time license fee of \$950 from Prime Factors, 6529 Telegraph Ave., Oakland, Calif. 94609.

Tool Designed For NCR Users

CINCINNATI — Recon Systems, Inc. has introduced the Data Center Management and Control System package for users of the Virtual Resource Executive operating system of NCR Corp. equipment. It consists of six interlocking sub-modules aimed at computer site management, the vendor said.

The submodules are job accounting, chargeback accounting, project management, performance assessment, catalog job management and an accounting base.

The combined license fee is \$7,575 from The Software Clearing House, 771 Neeb Road, Cincinnati, Ohio 45238.

RPG-III Cross-Reference Aid Targets Users of Wang VS Minis

WHITTIER, Calif. — Minicomputer Interactive Systems has introduced an RPG-III cross-reference and documentation aid for the Wang Laboratories, Inc. VS series of minicomputers.

The package is made up of two major functional groups of programs and sorts. Group I is a pair of programs using a single RPG-III source file as its input to produce comprehensive field name and indicator cross references, the vendor said.

Group II includes programs to load

and maintain the master file, which is then accessed by various sort/report combinations to produce additional documentation aids. The input for this file consists of all of the user's RPG III files by application. This allows overall documentation of an application, the vendor reported.

The aid is available for \$450 from Minicomputer Interactive Systems, P.O. Box 54, Whittier, Calif. 90608.

Utility Tools Fit IBM System/34

DENVER, Pa. — Albert Associates, Inc. has announced the availability of a variety of utility packages for IBM System/34 users.

The packages include PAO1, which produces a fields-where-used list from RPG-II source programs. References to files, tables and arrays as used on input, extension, calculation and output specifications are given, the vendor said. It sells for \$100.

Also available are PAO2 (priced at \$150), a set of programs for maintaining data file layouts in a disk file; PAO3 (\$50), which was designed to maintain a list of file-extend parameters by file name; PAO4 (\$50), which is intended to turn on or off procedure logging to the system history file on a library-by-library basis; PAO5 (\$50), which reportedly enables the user to set and maintain standards in disk/sort header specifications; and PAO6 (\$75), which is a global library scan.

Albert Associates can be reached at P.O. Box 207, Denver, Pa. 17517.



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Micro Notes

File Sort Option Version 2.0 for the multiuser Oasis operating system is available for \$695 from Phase One Systems, Inc., Suite 830, 7700 Edgewater Drive, Oakland, Calif. 94621.

XPS, Inc. has announced an information management package called **Nansii** for CP/M-based microcomputer systems. It is priced at \$249.95, with a demonstration package priced at \$29.95, the vendor said from 323 York Road, Carlisle, Pa. 17013.

A **Symbolic Dynamic Access Method Version II** data management system is available from Computer Development Specialists of Long Island, Inc. The package reportedly allows a microcomputer to have the professional characteristics of a mainframe data base management system. It costs \$149, the vendor said from Suite 23, 90 Broadhollow Road, Melville, N.Y. 11747.

An **Applications Generation Program**, offered by Alpha Data, Inc., was designed to enable an untrained operator to develop data base management applications. The package costs \$995, the vendor said from Suite 103, 417

Welshwood Drive, Nashville, Tenn. 37211.

Micro Resources Corp. has announced a video text editor called **Mr Edit**. It can be used on CP/M or MP/M operating systems and requires a 20K-byte program area. It costs \$90, including a manual, the vendor said from Suite 117B, 6922 Harding Road, Nashville, Tenn. 37221.

Dynamic Microprocessor Associates, Inc. is offering **The Formula**, an applications development package for CP/M-based microprocessors. The package is available for Zilog, Inc. Z80 and Intel Corp. 8080 processors. The package costs \$595, the firm said from 545 Fifth Ave., New York, N.Y. 10017.

APC Basic was announced by American Planning Corp. Designed in Zilog, Inc. Z80 code, the package operates with DOS, CM/M or APC DOS operating systems. It costs \$400, the firm said from Suite 423, 4600 Duke St., Alexandria, Va. 22304.

A graphics package is available from Micro-labs, Inc. Called the **Grafyx Solution**, the package operates on Radio Shack TRS-80 pro-

cessors. It costs \$299, the vendor said from 902 Pinecrest, Richardson, Texas 75080.

Televideo Systems, Inc. is offering the **RM/Cobol** programming language for use on its series of single and multiuser small business systems. The package is supported on the firm's Most operating system. RM/Cobol costs \$750, the vendor said from 1170 Morse Ave., Sunnyvale, Calif. 94086.

Vanguard Data Systems, Inc. has announced a computer security program called **Secure**. The package was designed to prevent unauthorized access to computer systems. It costs \$150 and runs on the CP/M operating system, the vendor said from Suite 3A, 8696 S. Atlantic Ave., South Gate, Calif. 90280.

An enhanced release of an applications development language, **Quick-N-Easi**, is available from Standard Microsystems, Inc. Called **Release 1.3**, the language runs under CP/M and operates on Zilog, Inc. Z80-based systems. It costs \$395, the vendor said from 136 Granite Hill Court, Langhorne, Pa. 19047.

An interface to **Gateway 34/38**, a communi-

cations front-end that runs on IBM's Series/1 minicomputer, has been provided by Systar Corp. for users of IBM's Personal Computer to enable them to access standard application programs running on the IBM System/34 or System/38. The one-time base license fee is \$15,000 and includes support for the IBM 3101 terminal. Systar is at Suite 208, 1762 Technology Drive, San Jose, Calif. 95110.

A native code **Ada** compiler for Zilog, Inc. Z80, Intel Corp. 8080 and 8086/8088-based microprocessors and requiring Digital Research, Inc.'s CP/M operating system with 48K bytes of memory is available for \$250 from Super-soft, Inc., P.O. Box 1628, Champaign, Ill., 61820.

A data communications software package for microcomputers called **Magic Messenger** is available for \$300 from Management Science America, Inc., 3445 Peachtree Road, N.E., Atlanta, Ga. 30326.

Graph, a graphics software package that can interface directly with Software Publishing Corp.'s personal filing system data bases, VisiCorp's Visicalc, Apple Computer, Inc.'s Silhouette printer, Epson America, Inc.'s printer and Hewlett-Packard Co.'s 7470A plotter printers is available now for the Apple II. It costs \$125 from the vendor at 1901 Landings Drive, Mountain View, Calif. 94043.

The **Selector V**, a data base management system/stand-alone application package, produced using Digital Research, Inc.'s CB-80 Basic compiler, is available for \$495 from Micro-Ap, Inc., Suite 206, 7033 Village Parkway, Dublin, Calif. 94566.

Two Digital Research, Inc. CP/M versions of International Entry Systems, Inc.'s **Bisync** and **Ttycom** communications programs for transmitting and receiving data files are available from the company located at 408 N.E., 72nd St., Seattle, Wash. 98115.

An updated version of the **Dbase II**, a relational data base management system for microcomputers, is available for \$700 from Ashton-Tate, 9929 W. Jefferson Blvd., Culver City, Calif. 90230.

The **Exek**, a memory-resident, multitasking operating system to control operation of Intel Corp. 8086/8088 systems in real-time environments, is available for \$1,250 from Modular Integration, Inc., Suite 4, 1505 N.W. Gilman Blvd., P.O. Box 1079, Issaquah, Wash. 98027.

An enhanced Digital Research, Inc.'s CP/M software package called the **Super CP/M**, which reportedly can generate any drive system (sys/gen) including hard disk and tape drives, is available for \$190 from Systems Group, 1601 Orangewood Ave., Orange, Calif. 92668.

A business management computer software package called **Dimension One**, which is said to feature applications without programming, was introduced by Capro, Inc. It was designed around the Intel Corp. 8086 microprocessor. A base configuration includes 128K bytes of random-access memory, a 35M-byte Winchester disk, streaming tape drive, 200 matrix printer and two CRT terminals costing \$60,000. It is available from the vendor at Suite 210, 4921 Birch, Newport Beach, Calif. 92660.

Graphics Video Generator for the Digital Equipment Corp. LSI-11, PDP-11/2 and PDP-11/23 has been introduced by Mennen Medical, Inc. It is available for \$1,495 from the vendor at 10123 Main St., Clarence, N.Y. 14031.

Executive Briefing System is a graphics package for the Apple Computer, Inc. Apple II from Professional Software Technology, Inc. It is available for \$199 from the vendor at 180 Franklin St., Cambridge, Mass. 02139.

A communications package called **Net*Star** has been introduced by Terminals Unlimited for the Digital Research, Inc. CP/M-based microcomputers. It offers automated transfer of word processing documents, data files and object code between local and/or national networks. The stand-alone version costs \$895 from the vendor at 350 S. Washington St., Falls Church, Va. 22046.

A program generator, **Pearl III**, has been introduced by Zenith Data Systems, Inc. for the company's Z89 and Z90 microcomputers. It is available for \$650 from the vendor at 1000 Milwaukee Ave., Glenview, Ill. 60025.

CRTI is a program generator introduced by Cybernetics, Inc. It is an interactive system for RM/Cobol software development under Digital Research, Inc.'s CP/M, MP/M; Phase One Systems' Oasis, Moasis; and Bell Laboratories, Inc.'s Unix operating systems.



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PART 2

TRADE SECRETS

By James Pooley

If you're a high-tech employer, you may have more proprietary technology than you think. Have you identified and protected your trade secrets?

If you're an employee, you may have considered starting your own company — and competing with your present employer. Do you know what ideas you can or cannot take with you?

In this two-part series, Silicon Valley-based attorney James Pooley offers solid advice on trade secrets — to keep both employers and employees out of court. This week: What happens when an employee leaves the fold?

THE VAST MAJORITY OF THE lawsuits prosecuted in this country for "unfair competition" relate to customer list theft and employee raiding. Let us temporarily set aside the emphasis on technological issues and instead concentrate on issues pertinent to every American business, examining what constitutes acceptable competitive practices.

Many lawyers believe that customer list theft and employee raiding stimulate so much litigation because they are emotional issues. When a trusted employee or supplier improperly uses confidential technology, it is relatively easy to confront the suspect. The person is simply a thief and should be dealt with accordingly. Lines are not so clearly drawn in soliciting cus-

tomers and employees. The outrage reflects the frustration of knowing you've been had, while being unable to legally substantiate your claims to others.

In the area of technology and proprietary innovations, the lawsuit is largely left to the experts. After all, most judges have little training for independently resolving such issues. But, when

a basic propriety of a competitive business practice is in question, the courts, as regular arbiters of what is equitable and just, enthusiastically join the debate without help from anyone else. As a result, court decisions in these

two areas are often inconsistent and are characterized by a heavy reliance on the "peculiar facts" of each case. In other words, the court will weigh the merits of your case on the appearance of unfair conduct by the opponent rather than on the ap-

From *Trade Secrets: How to Protect Your Ideas and Assets*, by James Pooley, to be published this month. Copyright © 1982 McGraw-Hill, Inc. Used by permission of Osborne, McGraw-Hill, Berkeley, Calif.



IN DEPTH

plication of legal "precedents."

Advance planning and the proper approach to litigation can play a fundamental role in those cases that involve customer list theft and employee raiding.

General Concepts

Because the law here is uncertain, is still evolving and often varies among courts and the states, you should not rely on specific rules. However, the courts have contributed several use-

ful themes and general concepts. We will examine these and consider some specific suggestions for planning against and reacting to these situations. First, consider an example of how the courts have treated these issues in the past.

In the early 1960s, many "national" insurance companies operated under the American Agency System. Licensed agents represented a number of different companies, offering competing lines to their customers.

One company, the American Republic Insurance Co., shifted to an exclusive agency system. It created regional and local organizations of agents who sold exclusively American policies. The agents were given significant sales incentives and were provided with leads for prospective customers resulting from regional and national advertising campaigns conducted by the company.

In late 1966, Union Fidelity Life Insurance Co. set up a system similar to

American's, offering exclusive area franchises to experienced agents willing to sell Union's product exclusively. To implement the most efficient system possible, Union planned to recruit area managers from other insurance companies and communicated with one of American's regional managers, LeRoy Lindgren.

In February 1967, Lindgren responded to the inquiry by completing a questionnaire, noting that 27 agents worked under his direction. Later that month, a telephone conversation between Lindgren and Alfred Coletta, an officer of Union, took place. Coletta expressed Union's intent to attract managers "who have an agent's following." Lindgren replied that he felt he could retain "a good 90% of the organization."

By mid-April, Lindgren had signed an employment contract with Union, but he did not resign from American until two weeks later. During that interval, he tried to persuade those working for him to leave and join Union. Finally, when he submitted his own resignation, he terminated every agent who worked for him in American's organization.

Lindgren brought 15 of the former American agents to Union, but that was not all. He also retained "customer lead cards" and other information American had provided him for soliciting business.


A federal court found that both Lindgren and Union had conspired to commit unfair competitive practices. Lindgren, as an American manager, had a duty to work only in American's interests while he was in its employ. His wholesale solicitation of American's employees was considered tantamount to stealing one of American's most important assets.

Although the court noted, "There is no proprietary right to customers or proposed customers," it added that "a variety of theories" (but primarily breach of trust) can be used to justify prohibiting an employee from using a customer list developed by the employer at great expense. (*American Republic Insurance Co. vs. Union Fidelity Life Insurance Co.*, Ninth Circuit U.S. Court of Appeals 1972, 470 F2d 820).

Special Significance

American vs. Union is especially significant for three reasons. First, the timing of Lindgren's actions in soliciting American's employees was important. Had he waited until after resigning from American, he might have done exactly what he did without punishment.

Second, not only the departing manager but also his new employer were found liable. Weigh the significance of this factor before you consider hiring away from a competitor. Unless you plan and control your solicitation of another's employees (as well as the material they bring), your plans may be halted. Expensive litigation could ensue, possibly result-



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ing in damages being awarded (here, punitive damages were assessed against Union in addition to American's loss of profits).

Finally, the case demonstrated the importance of proper documentation in defending against a charge of improper solicitation. An unnecessary "paper trail" of evidence provided to American's lawyers showed that the solicitation was planned in advance and with Union's knowledge. Had Union anticipated the litigation, this sort of damning evidence would not have existed. Indeed, some useful, self-serving documents could have been created in the first place.

Customer Raids

What can you do now to prevent or minimize the effect of a "raid" on your customers by a former employee? Develop evidence to guide a judge to conclude that your customer information should be protected. First, be sure that your customer lists include additional information about the needs, preferences and buying habits of each particular customer. (A "list" is simply a customer record whether stored on paper, in computer files or in someone's hands.)

Require salespeople to keep records and submit reports concerning why they successfully sell to particular customers. While employed, the salespeople may confirm in writing that you can expect long, exclusive relationships with their customers. And they will most likely boast about the "special knowledge" used to close a sale. All of this information can haunt them at a later time and contradict the predictable position they will take in court that they have not had access to proprietary business information.

In addition, these reports and records should include the salesperson's

careful projections of future expected sales to given customers. This sort of admission could assist enormously in litigation when one of your biggest headaches will be proving damages through lost sales.

Second, take reasonable steps to protect your lists and related confidential customer information. Supplement the following checklist with a thorough review of material on trade secret protection in general.

- Divide knowledge of the infor-

mation among enough employees to reduce the impact of the departure of any single employee.

- Regularly and extensively use confidentiality legends and stamps.

- Clearly and regularly educate your employees to know what you consider as confidential customer information and what their obligation is to protect it.

- Secure written contracts from sales, marketing personnel and consultants acknowledging the exis-

tence of confidential customer information and promising to protect it from improper use or disclosure. Of course, where permitted, consider the possibility of a noncompetition agreement; however, don't demand more protection — in terms of time or geographical area — than you actually need. The courts frown on overreaching in these contracts, and even a limited restriction will profoundly affect an employee's ability to seek competitive employment or

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IMS DL/I	Apr. 12-14			\$445	\$4450
	June 21-23				
IMS Data Communications	Apr. 15-16			\$345	\$3450
	June 24-25				
CICS TRAINING (NEW)					
CICS Command-Level Programming		July 28-30		\$595	\$5950
OS/VS TRAINING					
Job Control Language	Apr. 5-7			\$445	\$4450
	June 28-30				
MVS Dump Debugging	June 21-23	Apr. 19-21		\$445	\$4450
VSAM in COBOL		June 28-30		\$395	\$3950
ANS COBOL	May 3-21	June 28-July 19	June 17-Aug. 17	\$975	call registrar
USER TRAINING					
Intro to Data Processing	June 7-8	Apr. 5-6		\$175	\$1750
		July 19-20			
Data Processing for the Non DP Executive	May 24-26			\$395	\$3950
SYSTEMS TRAINING					
Project Management	June 14-17			\$595	call registrar
Design Technique Workshop	May 17-21			\$695	call registrar
Systems Analysis Workshop	Apr. 12-16			\$695	call registrar
ENTRY LEVEL TRAINING					
45 Days COBOL Programming		May 17	Sept. 8	\$3100	call registrar
60 Days COBOL and OS		May 17	Sept. 8	\$3300	call registrar
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IN DEPTH

begin a competitive business.

Third, keep accounting records that permit retrieving periodic marketing, advertising and other goodwill-generating campaign expenses on short notice. Keep in mind that the courts, in deciding whether to allow protection at all, carefully measure the value of the information by the cost of producing it. In many businesses, these numbers can be staggering and can disproportionately affect a judge who must rapidly decide whether to issue a temporary injunction.

Finally, always act quickly when an employee with access to confidential customer information leaves. Aggressive action in protecting your business assets will be a practical lesson for remaining employees and will discourage them from making plans for trading in proprietary data. Moreover, litigation and threats of litigation can have a collateral effect on your customers, encouraging them to stay in the fold in spite of the new solicitations.

However, consider this risk as well: Some customers may avoid involvement by giving business to neither side. Indeed, some may perceive your actions as efforts to stifle legitimate competition and may be more receptive to your former employee's solicitation.

Before concluding the discussion of customer lists, we will consider three more issues: suppliers, special legislation and solicitation.

• **Suppliers.** The courts do not yet generally accept claims for improper use of confidential information concerning suppliers rather than customers. Such claims have been made in the trial courts and at least provide additional evidence of inappropriate competitive conduct. Businesses often spend significant time and money to develop a coterie of vendors. These may be selected for their facilities, products and service characteristics, which are as difficult to determine as a customer's "needs, preferences and buying habits."

In addition, suppliers are often involved in technology trade secret claims, since they are regularly given access to secret formulas, drawings,

'Always act quickly when an employee with access to confidential customer information leaves. Aggressive action in protecting your business assets will be a practical lesson for remaining employees and will discourage them from making plans for trading in proprietary data.'

designs, tooling and the like. An employee's choice of identical suppliers for a competitive business may or may not be unfair by itself, but

will often provide evidence of an attempt to use the former employer's proprietary technology.

• **Special Legislation.** Review the

statutes in your state for any special legislation enacted to protect confidential customer information in your industry. Such a statute was recently enacted in California, giving special protection to personnel recruiters. It declares that the identity of all customers serviced within a six-month period prior to an employee's termination constitutes a "trade secret."

• **Solicitation.** In customer list cases, the courts normally regard solicitation as the improper act by the

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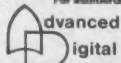
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IN DEPTH

former employee and will not interfere with the acceptance of unsolicited business. What constitutes solicitation, therefore, is often an issue. Clearly, when the customer learns of the new competition and solicits your former employee's business, there can be no claim of unfair competition.

What happens when the ex-employee merely announces a new affiliation to your customers without specifically asking for their patron-

age? The answer is not so straightforward. Some courts have taken the view, especially in earlier cases, that merely sending announcements did not constitute "solicitation." This was held to be the rule though the announcements were sent to customers from a confidential list. Other courts have taken a different view, holding that sending announcements necessarily implies a request for patronage and it is unfair to allow an employee to make any use of a

confidential customer list.

If you are concerned with the propriety of that type of activity by your employees or if you are considering competing with your present employer, consult with counsel to determine the rule in your own jurisdiction.

Starting Up While On the Payroll

It is not illegal to prepare to compete with your employer before leav-

ing your present job. Strictly adhere to a few simple rules and you can accomplish the objectives already discussed in this article before you change jobs or start your enterprise. Even if your employment contract appears to prohibit you from moonlighting or competing with your employer, you are entitled to take certain preparatory steps.

First, be sure everything you do is only in preparation for doing business and not actually doing business. You can lease office space; reserve a phone number; print business cards,

'It is not illegal to prepare to compete with your employer before leaving your present job. Even if your employment contract appears to prohibit you from moonlighting or competing with your employer, you are entitled to take certain preparatory steps.'

announcements and stationery; rent furniture and the like. You normally must do things before opening your doors. But, you should not actually begin business by ordering material, preselling customers, creating product plans or hiring employees.

Second, don't let your efforts interfere with your present employment. Remember, whatever the terms of your employment contract, you owe your employer a full day's work. You will not prove your indispensability to the world and you may provoke a lawsuit if you make your peers or superiors look bad by leaving a significant amount of unfinished work. Finish all projects you can, eliminating potential arguments that you planned to harm the company by leaving.

Use accrued vacation days or evenings to accomplish your planning activities. Don't work on your business plans in your office on company time or using your company secretary. When it's time to give notice, do it in writing and offer to stay on or consult to provide a smooth transition. Your offer will probably be rejected anyway, and it provides excellent evidence of your good intentions.

Third, don't use anything that belongs to your employer. Don't use logos or products from your employer or even anything similar to those used or sold by your employer. To do otherwise simply adds to the resentment of those you leave behind and acts as a red flag to encourage a lawsuit. Don't keep anything at home or at your new office that you produced while working for your present employer, even if you wish to keep it only as a work sample. Leave material at your present office and prepare it to turn over to your superiors when you are ready to give notice.

Fourth, don't start building your new staff from the ranks of your employer before you leave. Isolated hy-

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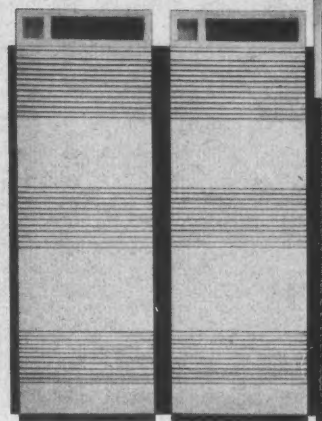
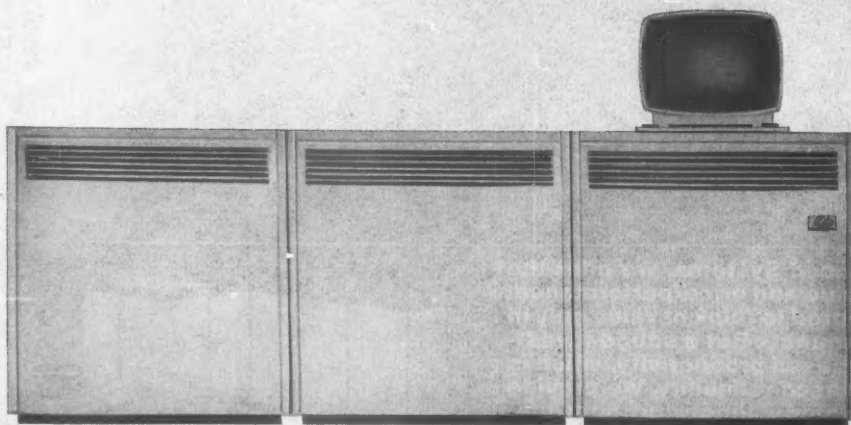
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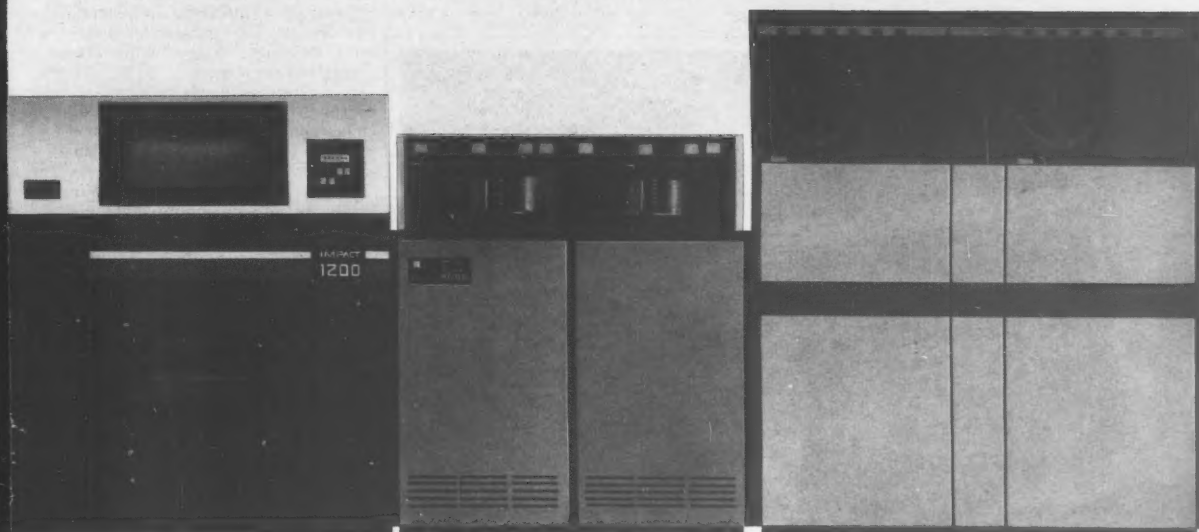
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pothetical conversations are acceptable, but anything more may be viewed as a large-scale recruiting "conspiracy." Once you have left, those who feel a loyalty to you will probably approach you for potential employment in your new venture, and there is certainly nothing wrong with accepting their solicitation. In addition, you may require few people initially, and it is illogical to pay salaries for unproductive time.

During this critical time, if ap-

proached by members of your present staff, simply thank them for their interest and explain that you cannot respond to their request until you have departed. Then note the solicitation in your records for later reference and follow-up.

If several people want to follow you, however, substantial pressure may be placed on them when the news breaks. Often your former employer will determine who is "targeted" and may immediately begin

strenuous efforts to talk them into staying. Or worse, an injunction may be sought to stop you from hiring additional employees from the company. What do you do? Hire them all right away? It is not only expensive, but increases the chance of litigation because the employer has clearly been hurt. Many courts will view such an act as strong evidence of your intent to harm the company by causing a precipitous loss of staff.

On the other hand, some courts

have considered a "stretched-out" hiring program as evidence of evil motive. You want to maintain "spies" within the old organization to provide confidential information as it develops. You want to put your former employer at an unfair advantage by having it feed and clothe your "inventory" of future employees, and you will pick them off only as your business requires them. This ambivalent attitude of the judiciary offers no clear guidance. In general, however, consider these ordered factors in determining when to hire former fellow employees:

- Your business needs.
- The likely responsive action of your former employer (including the potential of seeking and securing an injunction at any given point).
- The possible implications of your timing as evidence of intent to injure.

Your Own Technology

Consider how to establish and protect your own trade secrets. Create a protection plan early, and stick to it religiously.

Objectively analyze and define your employer's technology and the marketplace(s) in which you will be competing. Distinguish what you have learned about your job generally from what you have learned by accessing your employer's special trade secrets. By answering these questions, you can more effectively direct your energies toward pursuing a technology with a minimized litigation risk.

Focus on technology distinct from your employer's, which is applied in different markets and/or which derives primarily from your skill and "know-how," rather than from the unique and secret designs and processes of your employer. Even if this cannot be totally accomplished, focusing on it will help create the appearance of a different technology. In this area of the law, as we have seen, appearances are critical.

Properly examine what the company might claim as its proprietary information. What constitutes its real technology or business data? What has it consistently tried to protect? Pursue this inquiry to understand what areas to avoid in your new venture and to glean information of potential value in a lawsuit. In court, the company must demonstrate it took reasonable measures to guard against disclosure of the claimed secrets. And although I don't suggest it as a deliberate high-visibility strategy, you may help the company properly "publish" certain information before you leave.

Certainly, you cannot improperly disclose confidential data to a third party and then claim that as a result of your illegal act, it is now available to you in the public domain. However, consider legitimate opportunities to encourage publication such as in promotional material or technical magazines, where the exposure argu-



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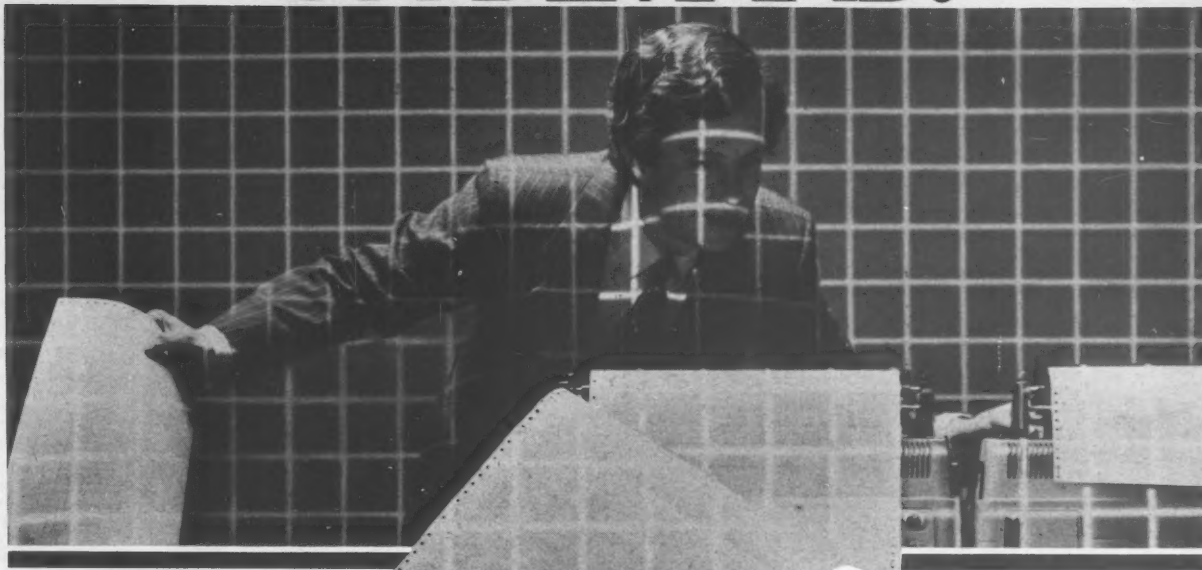
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ably serves the company's interest.

Pursuing "me-too" technology, even if you believe it does not violate your employer's proprietary rights, may dangerously invite litigation based on the mere suspicion of trade secrets theft. Therefore, try to differentiate your technology from your employer's, especially in the intended market. Clearly, your primary objectives are to develop your business and avoid litigation. A differentiated product creates greater recognition in the marketplace and presents less of a threat to your former employer, who will be less inclined to invest re-

'Protect your own technology. Don't be paranoid, but be extremely prudent in your business dealings with potential investors, customers and vendors. Prepare nondisclosure agreements in advance of any discussion of your technology or marketing plans.'

sources in a lawsuit.

Even if your technology undoubtedly differs in substance, don't stop there. Do everything possible to make it appear substantially different, especially to the layperson. A judge's eyes often glaze over during

the thorough analysis and comparison of two mechanisms, but a judge can immediately see whether they look similar or seem to do similar things. This immediate impression is critical, and given the opportunity, design your product to affect that first impression.

You must keep accurate and complete records of the development of your technology. At any time, you must be able to re-create the process by which you conceived and developed your technology from scratch. The best proof of that effort consists of engineering notebooks, dated drawings and other documents. Taken together, they should provide a clear written chronology of your independent work. Although the warning was expressed before, it bears repeating here: Do not, under any circumstances, either use or retain anything from your present employer and be sure adequate records show you returned all the material you have accessed.

Finally, protect your own technology. Don't be paranoid, but be extremely prudent in your business dealings with potential investors, customers and vendors. Prepare nondisclosure agreements in advance of any discussion of your technology or marketing plans (see Figure 1).

Conscientiously prepare a general description of your technology suffi-

cient for the purpose of your meeting, without revealing the details of your own trade secrets. Disclose only enough information to venture capitalists and investors to create and maintain their interest, until they are sufficiently committed to justify a more complete disclosure. A conscientiously and professionally prepared business plan will describe your technology and its intended exploitation in careful terms.

Creating Customer Lists

This is perhaps the easiest area in which to act preventatively and avoid litigation. Nevertheless, this subject area most frequently generates unfair competition litigation. Employers highly value the goodwill they establish to ensure continued patronage from regular customers, and they are enraged by the employee who "steals" that goodwill. Again, appearances are as important as the substance of your actions.

Identify and assess the marketplace and the types of customers it comprises. Determine the essential elements in their choice of suppliers of your goods or services. Customer trade that is based on personal service and friendship creates the greatest difficulty. Loyalties are difficult to change, and it is easily presumed that you could only obtain such a customer through improper means.

On the other hand, customers who buy because of price, performance or an objective measure of service are more easily obtained. With this type of customer, a court is less likely to assume that you have used information improperly and more likely to conclude that your success reflects effective and fair competition and a



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superior product or service.

Focus your market analysis on how you identify potential customers. How many can be readily identified from "public" sources such as telephone books, trade publications, industry association mailing lists and the like? The easier it is to make that identification, the better. It is that much harder for your employer to claim the "list" as a trade secret. However, a distinction may be drawn — and usually is — between ready identification of a corporate customer and identification of the individual decision maker within the organization whose name may not be so easily discovered.

Two principles apply: *Start from scratch* and *keep complete records*. Begin with a written analysis of the marketplace and potential customer groups and with a list of possible public sources of names. As you review these sources and create your prospect list, prepare a separate contact sheet for each prospective customer (see Figure 2). On that sheet,

identify the customer by name, address and telephone number, and indicate the public source of information. Fill in dates, names and the content of conversations.

The first recorded call on each contact sheet is the "cold" call, where you telephone the customer's main office, gradually working your way from the receptionist to the decision maker, recording the names of everyone with whom you speak. Strictly follow this procedure, even if you know you will finally contact the same individual you have been talking and socializing with at trade shows for the past five years. It may seem absolutely silly and a waste of time, but it will provide effective insurance against any charges that you have pirated customer information belonging to your former employer.

The entire effort is wasted, of course, if you keep your employer's customer lists. Therefore, leave all of that material at your present job. Remember, it is as bad to take confidential information in your head as it is

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Figure 1

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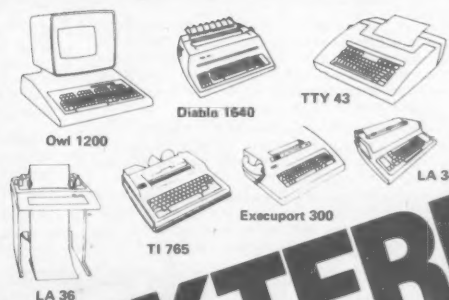
Name: _____
Address: _____

Phone: _____

DATE	NAME	DEPARTMENT/ POSITION	*TYPE CONTACT	COMMENTS

*CT = call to
CF = call from
MT = meeting

Figure 2



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 **TI 765**

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to take it on paper. Therefore, if you create any customer lists after you leave, be sure you can prove how you created them.

Of course, it is usually appropriate for the customer to solicit you. However, be sure to record that specific solicitation and to tell the customer emphatically that you cannot solicit business but that you appreciate the interest. In addition, remind the caller of who initiated the contact.

Don't solicit customers before you

leave. You might "sound out" a few trusted customers about what they might do if — hypothetically — you were to leave your present employment. However, this type of talk is dangerous and can be misunderstood. "Sounding out" may sound greedy to a judge. If you have a good product or service, it is better to proceed on the assumption that business will follow you. Indeed, given a choice, it is always better to create new business than to take the old. If

you do not hit your employer where it hurts, you are less likely to meet in the courts.

No-Frills Protection

Few companies need or can afford to institute all of the procedures outlined in this article. What is right for you depends upon a balance of several factors:

- Importance of secrecy of the data.
- Employee turnover.
- Ability to review and enforce any

particular procedures on a continuing basis.

• Cost weighed against the efficacy of any given method of protection.

If you are just starting out with a few employees and have neither the time nor money to perform all the suggested procedures, here is a list of the minimum safeguards you should institute from the beginning:

- Employment agreements that provide for protection of proprietary data and disclosure of ideas.
- "Confidential" stamps for business plans, customer lists, drawings and other technical data.
- Nondisclosure agreements, for vendors, customers, potential licensees and the like.

About the Author

A lawyer practicing in the Silicon Valley of Northern California, James Pooley has primarily represented high-technology firms involved in trade secrets and unfair competition litigation. He is a partner in the firm of Mosher, Pooley, Sullivan and Hendren.

Pooley received his undergraduate education at Lafayette College and the University of Paris and his law degree from Columbia University. He has served as a faculty member of the Hastings College of Trial and Appellate Advocacy and as lecturer for the University of California's Continuing Education of the Bar. He currently chairs the Lawyers Committee of the American Electronics Association.

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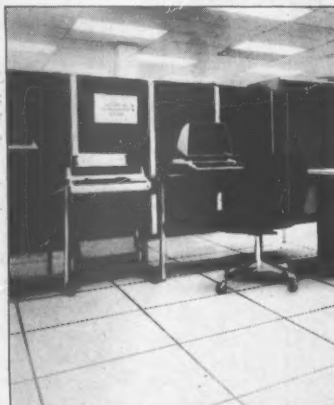
A background in software and systems testing methodology for large-scale systems. Prefer 2 years on-line programming experience.

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Managing the Maverick

A Three-Point Approach for DP Professionals

By Gary Slaughter

DP professionals have been described as loners, "a breed apart." How do you manage and motivate them? Part 1 of this three-part series provides a framework for understanding the DP professional and proposes a three-point management solution: (1) improving communication skills, which is covered this week; (2) lifting motivational barriers, to be discussed in Part 2 next week; and (3) effective management skills, which will conclude the series.

Most DP organizations today suffer from an overwhelming assortment of DP people problems. The list is long and discouraging:

- Low productivity.
- High turnover.
- Lack of loyalty.

- Low morale.
- Low work quality.
- High salaries.
- A shortage of good people.
- A low level of motivation and initiative.

There has never been a more urgent need for a new approach to managing and motivating DP people. The days when DP managers could comfortably count on the old management approaches to deliver high DP productivity have passed. The DP work environment is too complex and the human resource too scarce and expensive.

This series describes a management strategy designed specifically for DP managers and supervisors. This approach recognizes and ac-



IN DEPTH

commodates what we all know about DP people: They are quite different from other professionals.

Anyone who has worked with DPers can tell you how they differ. We often hear

the following characterizations:

- DP people are loners. They love working by themselves.
- DP personnel are technical, detail-oriented people

who would rather work with machines than with other people.

- DP people are creative and intelligent, but are often prima donnas.
- DP people are problem

solvers.

- DP people are crisis-oriented. They put off finishing their work until the last minute, seemingly to ensure a dramatic climax to their projects.

• DP people have no company loyalty. They are loyal only to their own careers and their own professions.

• DP people have huge egos that sometimes get in the way of getting the job done.

So, what is the implication for developing a new DP management approach? Is it possible to contend with these unusual characteristics while avoiding the severe people problems that plague us? The answer is yes, if we understand and take into account how DP professionals are motivated.

Two professors from the University of Colorado, J. Daniel Couger and Robert Zawacki, recently wrote *Motivating and Managing Computer Personnel*. Their book describes a study that proved statistically that DP people are quite different from other professionals, especially in terms of their needs and how they are motivated to fill those needs in the job setting.

Their study looked at three areas:

1. *Social need strength (SNS)*. How much social interaction do you need to be happy in your work?

2. *Growth need strength (GNS)*. How much growth must your job provide in order for you to be happy in your work?

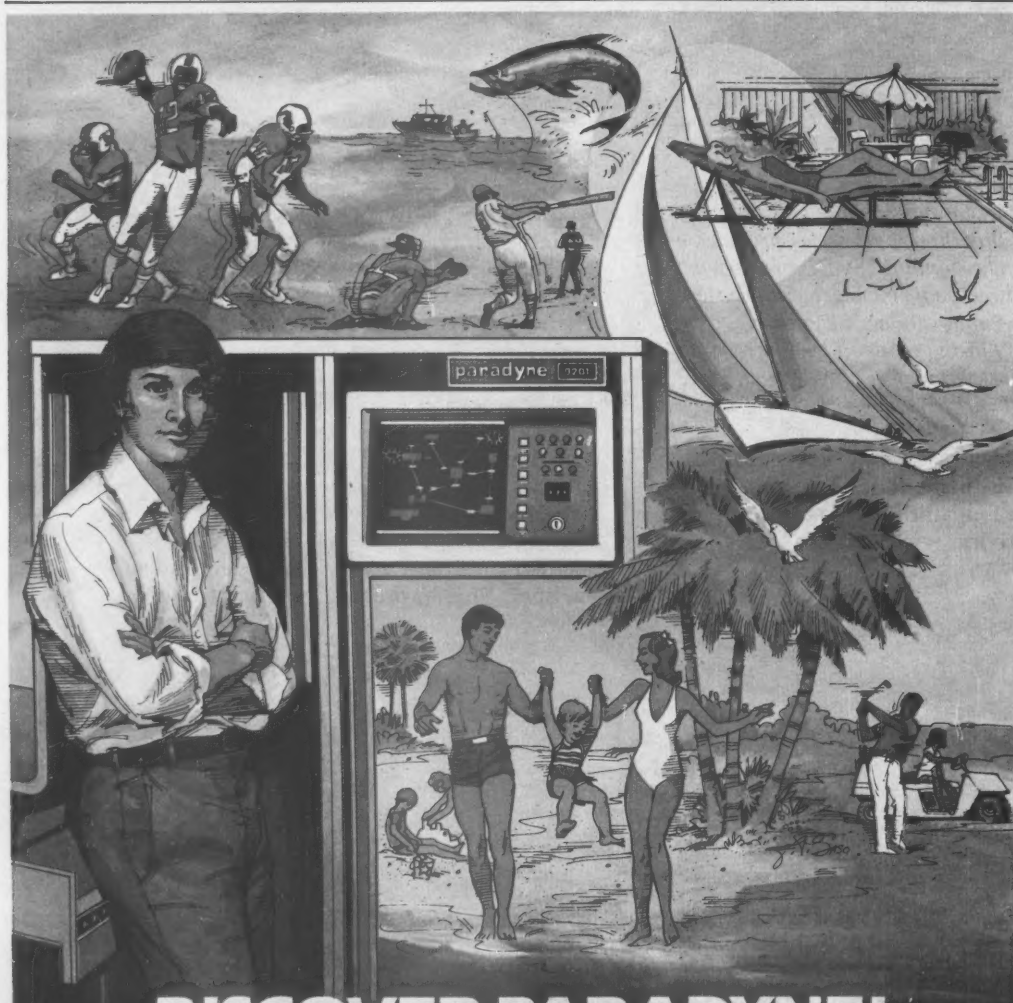
3. *Motivation potential score (MPS)*. How do you see your present job's potential for providing you with the level of professional growth that you need to be happy in your work?

Based on observation and common sense, we might have been able to predict where DP professionals would fall in terms of SNS and GNS. However, no one expected the study results to reveal the intensity of those need strengths. The scores showed that DP professionals have the *lowest* SNS, and at the same time the *highest* GNS, of 600 professions examined.

In the MPS, DP people generally scored quite high, thus revealing that they see their jobs and, more important, their professions as being able to provide them with the growth they so obviously need.

New Problems, Solutions

This study proves just how different DP people are in terms of their work motivation and how they view their profession's ability to meet



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their unusually low social needs and unusually high growth needs. With this new perspective of DP people problems, we can now see the three basic areas that a new DP management approach must address:

1. Because of the low SNS of DP personnel, they do not feel a need to communicate with other people to be happy in their work. However, communication is critically important to DP productivity. How do you resolve this dilemma?

2. Because of the high GNS of DP people, they must be provided with every opportunity to grow in their job setting or they will seek work elsewhere. What must we do to ensure that there are no barriers to their growth in the organization?

3. Solving the preceding two problems may take more time than we have available, because we are so busy managing DP the old way. How do we find the time to work on the first two problems?

Consider the following three-pronged DP management approach to these problems:

1. Teach communications skills to everyone in DP, especially DP managers and supervisors.

2. Teach DP managers and supervisors how to remove the common barriers to motivation in DP and how to replace them with a comprehensive DP human resources management program.

3. Teach DP managers and supervisors to use a new set of DP management tools to save them enough time to work actively on the solutions to the first two problems.

This series discusses each of these problems and their solutions.

Communications in DP

We now know that DP professionals have the lowest social need strength of 600 professions surveyed. Unlike salespeople, teachers and public relations professionals who have a high SNS and who enjoy communicating and interacting with others in their job environments, DP people do not need communication and human interaction to be happy in their work.

There are two reasons for the low SNS of the DP professional. First, data processing jobs provide an unusually large amount of feedback. DP work, such as programming, gives the worker a sense of completion and accomplishment. The worker re-

ceives feedback almost without the involvement of other people.

Second, the very qualities that make up highly competent DP professionals make them fundamentally asocial. The good DP professional is introspective and uses convergent thinking to identify problems and create computer-based solutions to those problems. These traits are extremely desirable in terms of getting the DP job done well.

For these reasons, DP professionals

feel little need for social interaction with other people in their work setting, including peers, subordinates and superiors. As a result, DP professionals see little value in long meetings, walkthroughs and training classes ("Just give us our video training package, and we'll go away and train ourselves").

How does this lack of need to communicate with others affect DP productivity? Very adversely. DP productivity depends heavily on

interaction, communication and feedback among all people in the DP environment — peers, subordinates, superiors and, most important, users. Effective communication is required at three stages of job performance:

- Defining the job (problem definition and job planning).
- Reporting progress on job completion (project control and milestone reporting).
- Communicating about the quality of the job results (follow-up).

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Low productivity is a high price to pay for ineffective communication among workers. Following are some of the other costs:

- *Guesswork and inaccuracy.* If we do not communicate effectively, we must guess where others are in their work. We make assumptions about their levels of progress, commit ourselves to unrealistic schedules and embarrass ourselves before top management and users.

- *Confusion.* Without full and effective communication among people in the DP work environment, the environment tends to be confused and disorganized. Lack of order results in slipshod work.

- *Assumptions and inference of motives.* Without direct and effective communication with others, we must make assumptions about other people's motives. This reliance on assumption leads to misunderstanding, suspicion and conflict.

- *Poor job performance and feedback.* Lack of effective communication about performance of the job itself leads to missed deadlines and schedules and budget overruns. Effective systems development project estimating, planning, scheduling and control depends almost entirely on full and accurate communication about job performance. The same holds true for effective operations production scheduling and control. Feedback after job completion is vitally important to job quality control.

- *Poor user and supervisor/subordinate relations.* Good relations between DP and its users and between DP professionals and their supervisors are vital to the continued health, prosperity and growth of the DP organization. The perennial problems of user relations can be attributed to one fundamental cause: poor communication.

Poor communication also lies at the root of bad relations between DP management and staff. We must keep in mind that many DP managers were once DP staff members. Consequently, they too may have a relatively low need for communicating with others. For this reason, DP managers rarely ascend the ranks of corporate management. To play the game of top management, a person must need to communicate and interact, delegate and cooperate with others,

which is difficult for many DP managers with a strong technical background.

- *Defensiveness and game-playing.* Lack of communication often results in nonproductive game-playing and

paranoia. With the current backlog of DP work in most organizations and with the lack of qualified people to complete that work, no DP manager can afford the time for this kind of nonproduc-

tive activity.

There is hope, however.

Solving the Problem

Communication skills can be taught — even to people who are fundamentally un-

communicative. Through the use of actual DP job exercises and experiential learning (allowing students to practice skills over and over), DP professionals can be taught communication skills to apply at

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IN DEPTH

work and in their personal lives. (Poor communication at home contributes significantly to the divorce rate among DP professionals, which is several times that of the population as a whole.)

The following communication skills should be taught to everyone in DP, starting with DP managers and supervisors:

- *Listening.* Good communication starts with listening.

Nowhere in our schooling are we taught listening skills. The verbal and non-verbal behaviors associated with effective listening are easily identified. Practice in an adult learning setting is

essential to building the confidence to use listening skills back on the job.

- *Questioning and interviewing.* As DP professionals, we depend heavily on our data gathering ability to provide

us with information to make decisions. Whether we are defining a user's problem or discussing project status with a subordinate, we are using our questioning and interviewing skills.

Because DP professionals are not highly motivated to use communication skills, most of them are poor at asking questions and interviewing. Many use "pseudo questions" or rely on clichés.



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'Creativity in problem-solving and decision-making is often stifled by the process we employ to solicit and synthesize it. Brainstorming is particularly effective in unleashing creativity in DP people if formal brainstorming rules are strictly followed.'

Practicing techniques to encourage the flow of information — preferably in a safe, adult learning setting — can dramatically improve a DP professional's data gathering ability.

- *Direction-giving and self-expression.* Once we have made a decision, preferably one based on accurate information gathered by effective listening and questioning, then we must communicate our decision to others. Proper communication techniques can ensure that decisions will be carried out as intended. If personnel learn and practice the techniques of effective direction-giving, the accuracy and effectiveness of communication in the DP environment will improve greatly and a more productive work situation will result.

• *Written communication.* DP professionals seem to have a special aversion to writing. Witness the recurrent problem with poor systems documentation; it is often poorly organized, badly written or incomplete. Meanwhile, the authors incorrectly assume that the complete communication job has been done simply because they have written something down. Effective written communication in DP can be learned and practiced and can add immensely to the overall effectiveness of DP managers and subordinates alike.

- *Brainstorming.* Creativity is a highly valued attribute in DP. Yet, creativity in problem-solving and decision-

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making is often stifled by the process we employ to solicit and synthesize it. Brainstorming is particularly effective in unleashing creativity in DP people if formal brainstorming rules are strictly followed. Learning these rules and practicing them can deliver immeasurable benefits.

• *Nonverbal communication.* Many times what we say in DP is not as important as how we say it. We can improve the effectiveness of DP communication of all kinds if we

recognize and appreciate the importance of nonverbal communication, which can be learned and practiced just like other DP communication skills.

• *Feedback.* Feedback is a vital link in the communication chain. Feedback is especially important when assessing the work performance of subordinates for purposes of project control, performance appraisal and salary review. While feedback is important to DP management, it is also

important to subordinates. DP managers and supervisors typically are poorly trained in the skill of giving appropriate feedback about work performance. High morale and job satisfaction require a good deal of feedback from management. Managers can be taught to recognize feedback as a two-way process and can learn effective feedback techniques.

• *Overcoming communication barriers.* The inherent nonsocial nature of good DP people creates communica-

tion barriers among them. Often, these barriers produce negative, unproductive communication and encounters. These negative encounters can be turned into positive ones if DP people are educated in the causes of communication barriers and practice effective communication techniques back on the job.

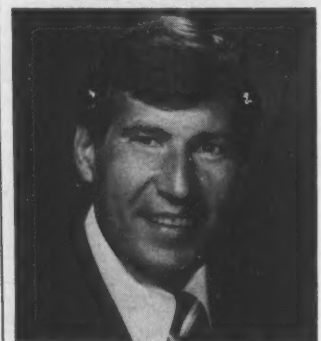
Communication Summary

Even though DP professionals do not have a strong need to communicate with others to be happy in their work, DP productivity and work performance depend heavily on effective and complete communication among everyone in and associated with DP.

Fortunately, even DP professionals who are not highly motivated to communicate can be taught those communication skills that are important to DP job performance, provided they are presented in a context that stresses job relevance and provides for experiential learning.

Next week, Part 2 of this series will discuss motivation in DP — the second basic problem. The third and final installment will cover management skills for DP professionals.

About the Author



Gary Slaughter is president of Gary Slaughter Corp., a consulting firm based in Bethesda, Md. Prior to founding that company, Slaughter was president of Brandon Systems Institute (BSI) for six years, from 1974 to 1979. While BSI president, he introduced a number of services for the DP industry including consortium training and human resource management publications.

Slaughter's DP background includes systems development management, project management and systems analysis positions. He has also worked in the areas of project control and operations, scheduling systems and standards.

He teaches DP management development courses in communication, motivation, management skills, productivity improvement, problem solving, decision making and conflict resolution. In addition, he wrote the Data Processing Training Manual.

Slaughter spent several years as an officer in the Navy and graduated from the University of Michigan School of Business Administration.

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To you this is news. To me this is Greek.

I've been wallowing in this mumbo jumbo you sent me for 3 days. I've read (tried to read) everything 5 times, and I still don't understand it. It's eating me up, Max. Life is too short for this kind of anxiety.

Please don't get me wrong. When I hear you rave about hurling whole data files between black boxes, with fail-safe error checking at both ends, I know you're on to something big. But what? I can't find the handle, Max. I can't turn it into a nice, simple, dramatic message. Hell, I can't even read this stuff. The type turns into snakes.

I hate to let you down, Max. I know you've bought the ad space and have to run something. But you are going to have to sell this stuff, Max, not me. For now I suggest you just run an ad that says: For more information, contact Max Eveleth, President of IE Systems.

I'm sorry Max. I can't tell you how sorry I am. I'll buy you lunch.

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Ray Breneman

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Data Bits

Burroughs TD830/MT983 Gets Beehive Rival

SALT LAKE CITY, Utah — Beehive International, Inc. has introduced a CRT terminal designed to emulate the Burroughs Corp. TD830/MT983.

The DM83 reportedly features a detached keyboard with 16 user-definable function keys, numeric key pad, uppercase/lowercase characters, printer interface, scrolling, background print operations, line-drawing capability and self-test diagnostics.

The unit operates in all communications modes and supports all major Burroughs polling protocols, according to the vendor. Memory can be expanded to 36K bytes as an added option, the vendor spokesman added.

The DM83 costs \$1,995; deliveries will begin next month, the vendor said. Beehive is located at 4910 Amelia Earhart Drive, Box 25668, Salt Lake City, Utah 84125.

Electro Standards Lab Unveils Interface Analyzer

PROVIDENCE, R.I. — Electro Standards Laboratory, Inc. has announced the Model 700 RS-232 interface analyzer.

The unit is a diagnostic tool designed for use with standard RS-232 or CCITT V.24 data interface modems, according to the vendor.

The interface analyzer is in-

serted between the data terminal and data communications equipment to provide access and monitoring of all data, timing and control signals.

The Model 700 interface analyzer costs \$275. Electro Standards can be reached through P.O. Box 9144, Providence, R.I. 02840.

Line Monitor Features ROM Parameter Buffer

MONTGOMERYVILLE, Pa. — Digilog, Inc. has announced the DLM IV, a data line monitor that features an E² read-only memory (ROM) parameter buffer.

The unit was designed to allow nontechnical personnel to operate the device, according to

the vendor. The DLM IV data line monitor saves set up parameters and test output messages, even when the unit is turned off.

The unit costs \$4,695, the vendor said. Digilog is located at 1370 Welsh Road, Montgomeryville, Pa. 18936.

Penril Unveils Five-Speed Synchronous Modem

ROCKVILLE, Md. — Penril Corp. has announced a five-speed synchronous short-haul modem, the Model 8192.

The unit provides data communications over short-distance, nonloaded metallic cable pairs or local data channels at five operational speeds of 2,400,

4,800, 7,200, 9,600 or 19.2K bit/sec, according to the vendor.

The unit can be used as either a stand-alone or a rack-mounted unit in a standard 19-in. equipment rack.

The Model 8192 costs \$595 from Penril at 5520 Randolph Road, Rockville, Md. 20852.

Falco's Integral Modem Gives Bell Compatibility

SUNNYVALE, Calif. — Falco Data Products, Inc. has announced the TS-212, an integral modem.

The unit features built-in 300 or 1,200 bit/sec full-duplex transmission over a switched network.

It is reportedly compatible with Bell Laboratories 212A, 103 and 113 series modems.

The TS-212 integral modem costs \$2,295 from Falco Data Products at 1286 Lawrence Station Road, Sunnyvale, Calif. 94086.

Bank Reaps Dividends After Investment In ATM Network

WASHINGTON, D.C. — An automated teller machine (ATM) network with some novel financial control capabilities is producing significant benefits at the American Security Bank, the second largest in the nation's capital and one of the 100 largest in the U.S.

The network consists basically of 33 NCR Corp. self-service financial terminals connected to an IBM 3033 mainframe through an NCR Comten, Inc. communications processor.

"We monitor the network 24 hours a day, seven days a week from our operations center," according to Assistant Vice-President Barbara M. Feldman, who heads the group that has operational responsibility for the network. A number of maintenance functions are also centrally controlled and more are under consideration — for example, remote clearing of ATM cash dispensers through commands entered at the operations center.

Financial Controls

The financial control capability built into the American Security Bank's ATM network automatically creates a step-by-step audit trail that extends from the ATM to the customer's statement, Feldman reported. This capability, among its other benefits, eliminates lost and double-posted transactions, she said.

Besides dispensing cash, American Security Bank's ATMs allow use of either bank-issued Visa debit cards or proprietary American Security cards. The latter card holders can access demand deposit, savings and "Ready Reserve" credit accounts. Transaction options include balance inquiries, deposits and withdrawals, trans-

fers and third-party payments. Currently, about 52% of all transactions are withdrawals, 37% are balance inquiries, 10% are deposits and payments and 1% are transfers.

When the system went into operation in 1980, customers could make payments to their savings or demand-deposit accounts by envelope or through an electronic debit, Feldman said, adding "But Regulation E forced us to remove the electronic payments option. The quick changes required by Reg E demonstrate dramatically the flexibility of our system. Several banks had to shut down their ATM networks temporarily because they couldn't meet Reg E. It posed no such crisis for us because we can change our whole operation from central with a system generation, which alters the ATM screen."

Most other ATM-equipped banks in Washington, D.C., use standard screens, she added. American Security Bank has customized its displays.

'ATM-Plus' Gives IBM Emulation

DAYTON, Ohio — A software package said to give NCR Corp. automatic teller machines (ATM) the ability to emulate all the functions of the IBM 3624 ATM in a Synchronous Data Link Control/Systems Network Architecture (SDLC/SNA) environment is available from Automated Teller Machine Services Group.

ATM-Plus gives banks using IBM mainframes the option of using NCR ATMs.

The software costs \$2,450 per SDLC/SNA controller. Automated Teller Machine Services said from 245 W. Elmwood Drive, Dayton, Ohio 45459.

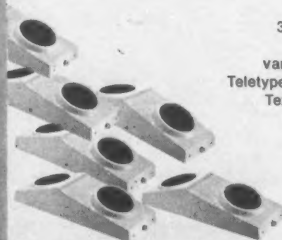
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TAC Releases Statistical Mux

ATLANTA — A four-channel statistical multiplexer designed for "plug-in" setup and operation is available from Technical Analysis Corp. (TAC).

The Intellicomm SM/4A is equipped with front-panel tutorial programming for use by nontechnical personnel. A pressure-sensitive keyboard on the front panel is said to incorporate a scrolling alphanumeric display that prompts the user to specify configuration variables.

The SM/4A automatically establishes the unit's configuration, either according to standard default values or to user-specified configuration information. Factory-installed default values include 4,800 bit/sec user lines and CTS/RTS flow control, the vendor said.

The device reportedly allows as many as four asynchronous terminal devices to communicate with a computer over a single synchronous or asynchronous communications link.

It costs \$1,795 from TAC at 120 W. Wieuca Road, N.E., Atlanta, Ga. 30042.

Butler Modem Sounds Human

KANSAS CITY, Mo. — Butler National Corp. has unveiled Adas VIII, a voice/data modem designed to communicate in a human-like language by integrating voice and data output either by standard data link or by voice-synthesized messages.

When interfaced to a host computer, Adas VIII can be used to perform standard originate/answer modem functions. Connected by a self-contained telephone coupler circuit to a standard telephone line, it can also deliver any vocal message via telephone to any telephone in the world, according to the vendor.

The modem connects to the host via an RS-232 interface through which all instructions to the Adas can be issued and status indications and modem data communicated.

Adas VIII costs between \$2,500 and \$3,500, depending on software options and is available now. The vendor is located at Suite 204, 800 W. 47th St., Kansas City, Mo. 64112.

Graphics Boards Aid CIT-101 Terminals

SANTA CLARA, Calif. — Selanar Corp. is offering two graphics boards for C. Itoh Electronics, Inc.'s CIT-101 alphanumeric CRT terminal.

The SG101 and SG201 were designed to enhance the CIT-101 with full-feature interactive capabilities. Both boards are said to provide 1,225 by 240 dot resolution on the CRT terminal.

The boards are said to be compatible with Tektronix, Inc. 4010 software. The SG101 also is compatible with Disspla and Telagraph from Integrated Software Systems Corp. and may be used with several other time-sharing packages, according to the vendor.

Both boards cost approximately \$1,500 each, Selanar said from 437-A Also Ave., Santa Clara, Calif. 95050.

IRC System Now IBM-Compatible

WESTLAKE VILLAGE, Calif. — Image Resource Corp. has announced that its Videoprint graphics hard-copy system is now compatible with the IBM 3279 CRT terminal via the IBM RPQ 7J 0039 (RGB) interface.

The Videoprint 5000 series was designed as a peripheral device for use with medium- to high-resolution computer graphics systems and composite video sources. It produces photographic hard copy in a choice of size formats to produce slides, negatives, instant prints or transparencies.

The single-unit price for the device starts at \$6,950, IRC said from 2260 Townsgate Road, Westlake Village, Calif. 91361.

Medium-Distance Modem, Double-Modem Card Out

ST. PAUL, Minn. — Astrocom Corp. has announced the availability of a medium-distance modem and a double-modem card for use with medium-distance modems.

Metromodem, designed to transmit synchronously at speeds of 2,400 bit/sec or 4,800 bit/sec over distances of up to 50 miles, is compatible with any combination of Western Electric 3002 load wire pairs and the T1 (digital) carrier network, according to the vendor.

Self-test and analysis features are said to include analog loop-back, digital loop-back and a control for placing the remote modem in digital loop-back from the local

Metromodem.

The double-modem card, designed for use on an LP3 nest, saves space by enabling a standard 16-card nest to accommodate up to 32 modems for customers employing modems in limited-distance situations, according to the vendor.

It was not designed for use with the Metromodem.

The Metromodem, priced at \$1,075 will be available from Astrocom in late May.

The double-modem card, priced at \$360, is available now, according to the vendor.

Astrocom is located at 120 W. Plato Blvd., St. Paul, Minn. 55107.

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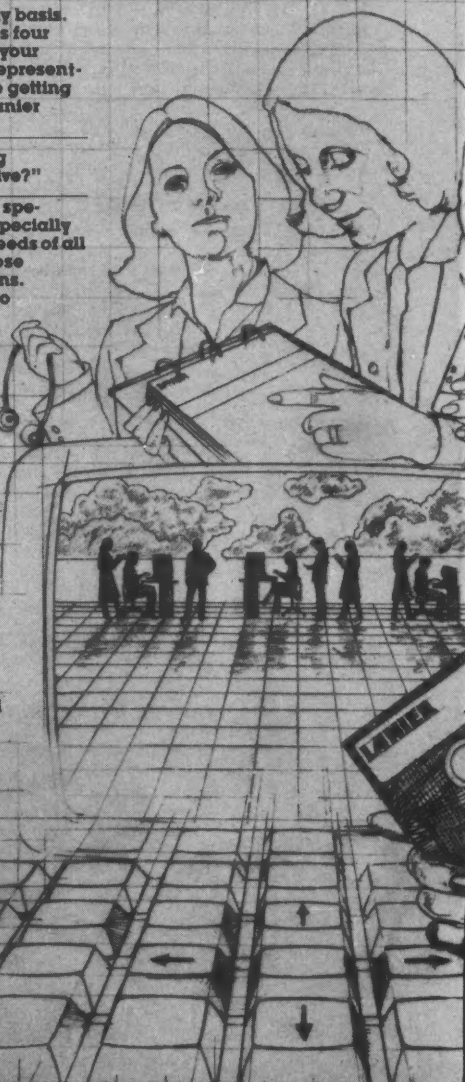
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Four-Channel Module Supports Microplexer Mux, Concentrators

ROCHELLE PARK, N.J. — A four-channel module for the Microplexer family of statistical multiplexers/data concentrators designed to support asynchronous traffic only, was announced by Timeplex, Inc.

Designated the M-14d, the module is interchangeable with existing synchronous/asynchronous modules and fully supports all Microplexer supervisory and network management features including the network configurator and extended diagnostics options, the vendor said.

Versions are available for RS-232 and Military Standards 188C and

118-114 operation, according to the vendor.

User-selectable standard features are said to include data speeds from 50- to 9,600 bit/sec; operation with any 5-, 6-, 7- or 8-bit asynchronous code, including 9-bit graphics terminals; odd, even or no parity; dynamically allocated buffers with user-selected priority; in-band or out-of-band traffic control; and automatic, noninterfering, downline loading of channel parameter changes.

The unit price is \$750 with quantity discounts available. Timeplex is located at One Communications Plaza, Rochelle Park, N.J. 07662.

Fiber-Optic Mux Unveiled For Short-Haul Applications

CANOGA PARK, Calif. — A fiber-optic multiplexer for short-haul applications up to three kilometers is available from Canoga Data Systems, Inc.

The CMX-832 is an eight-channel time division multiplexer expandable to a maximum of 32 channels with channel data rates of 1.2K- to 19.2K bit/sec, asynchronous or synchronous, according to the vendor.

The fiber-optic transmission technique insures electrical isolation, data security and freedom from electromagnetic interference, radiation or pickup, the vendor said.

The CMX-832 is said to be transparent to the character structure of the

data patterns, eliminating special formatting or protocol requirements and allowing each channel to operate independently with no interaction or waiting, the vendor said. The electrical channel interface at each end of the communications line is a full-duplex EIA-compatible connection with full EIA handshaking capability, according to the vendor.

Single-unit pricing for the CMX-832 multiplexer is \$2,700, Canoga Data Systems said from 21218 Vanowen St., Canoga Park, Calif. 91303.

Babymux Has Expander Kit

RESEARCH TRIANGLE PARK, N.C. — Network Products, Inc. has introduced a statistical multiplexer with two terminal ports that can be upgraded to five or more ports with an expander kit.

It can be set at rates up to 19.2K bit/sec in the synchronous mode, according to the vendor spokesman.

The Babymux supports a variety of options in transmission rate, parity, flow control, stop bits and character length. Terminal protocols support a variety of asynchronous terminals and CPUs, including those from Digital Equipment Corp. and Data General Corp., the vendor said.

The Babymux has a two-port multiplexer unit that sells for \$1,350. Each three-port expander kit costs \$475 from Network Products, P.O. Box 13239, Research Triangle Park, N.C. 27709.

Rixon Adds Data Modem

SILVER SPRING, Md. — Rixon, Inc. has introduced a modem designed to transmit and receive serial binary data asynchronously up to 300 bit/sec over the direct distance dialing switched network.

The T103J data modem operates in the originate or answer mode and is said to be compatible with all Bell Laboratories 103 and 113 series data modems. It is also compatible with Bell 212 and Rixon T212 data modems when the 212s operate in the low-speed mode, the vendor said.

Calls can be originated manually with a telephone or automatically with a Bell 801 or Rixon T801A/C Automatic Calling Unit. In the answer mode, calls may be answered either manually with a telephone or automatically under the control of the data terminal equipment, the vendor said.

Test features are said to include analog loopback and digital loopback. The modem is available as a desktop stand-alone or as a card modem for multiple modem rack mounting, the vendor said.

The stand-alone model costs \$595; the card modem, \$495; and the rack-mount unit costs \$1,015, the vendor said from Rixon, 2120 Industrial Pkwy., Silver Spring, Md. 20904.

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CRT Boasts Editing Feature

SUNNYVALE, Calif. — A CRT terminal with editing capability, block mode transmission and protected fields has been unveiled by Televideo Systems, Inc.

The Model 910 Plus features typewriter-like keyboard, 8 by 10 character resolution and upper-case and lowercase characters.

There are 10 preprogrammed function codes and 15 transmission rates from 50 bit/sec to 19.2K bit/sec, as well as self-testing diagnostics.

The Model 910 Plus CRT terminal costs \$699. Televideo is located at 1170 Morse Ave., Sunnyvale, Calif. 94086.

For Field Service Use

Four Test-Set Analyzers Introduced

LINCOLN, R.I. — International Data Sciences (IDS) has announced four data communications test-set analyzers.

The Hawk 4020 was designed for field service combining six test sets. It performs interactive troubleshooting and passive monitoring of serial data associated with the RS-232C digital interface, the vendor reported. It costs \$3,595.

The Model 3000E was designed for testing high-speed data communications channels operating up to 10M bit/sec, the vendor said. It was designed to operate with the IDS Model 2910D printer to provide a permanent record of test results. It costs \$5,500.

The Model 1320 is a portable, self-contained data test set designed to analyze the error rate of any digital transmission network, the vendor said. It can be used to test synchronous, asynchronous or start/stop character-oriented systems such as time division multiplexers. It costs \$4,145.

The Model 70 Current Interface Breakout Panel is a battery-powered, hand-held instrument designed to monitor and break out a Bell 303-type current interface between a modem and a terminal. It costs \$1,635, International Data Sciences said from 7 Wellington Road, Lincoln, R.I. 02865.

Arts Combination Terminal Prints Various Size Characters

BOSTON — Arts Computer Products, Inc. has introduced a combination terminal designed to print various size characters separately or

simultaneously and to talk. This terminal is the result of the merging of the company's Orator and Large Print Video Terminal (LPVT) software, the vendor said.

Designed for use in publishing, education and manufacturing, the terminal has a vocabulary of high-quality, full-word speech and the ability to alter the size and shape of the print on its CRT screen, the vendor said.

A buffer memory temporarily stores host transmissions and user inputs, scrolling like a CRT screen. The user may enter the buffer to reexamine its contents without affecting the user/host communications, the vendor said. It is Ascii- and RS-232C-compatible.

The price of the terminal is \$11,000 from Arts Computer Products at Suite 1260, 80 Boylston St., Boston, Mass. 02116.

Two Modems Introduced

HUNTSVILLE, Ala. — Universal Data Systems, Inc. has introduced two modems, Models 212 LP and 212A.

The Model 212 LP is reportedly powered from the telephone line and offers full-duplex, 1,200 bit/sec asynchronous operation. It is Federal Communications Commission certified for direct connection to the dial-up network and is compatible with the high-speed 1,200 bit/sec asynchronous channel of the Western Electric 212A.

The 212A utilizes full-duplex 300 and 1,200 bit/sec channels in the same system, according to the vendor. It is also FCC-certified for direct connection to the dial-up telephone network.

Model 212 LP costs \$495 and the Model 212A costs \$695 from the vendor at 5000 Bradford Drive, Huntsville, Ala. 35805.

Interface Links CPT, GE Systems

MINNEAPOLIS — CPT Corp. is offering an interface between the CPT 8100 word processor and the General Electric Co. Terminet 510 printer.

The interface reportedly includes all necessary hardware and software for connecting the 8100 terminal to the 510 printer.

An 8100 interfaced with the 510 can also be linked to a CPT daisywheel printer. The interface costs \$150, CPT said from 8100 Mitchell Road, P.O. Box 295, Minneapolis, Minn. 55440.



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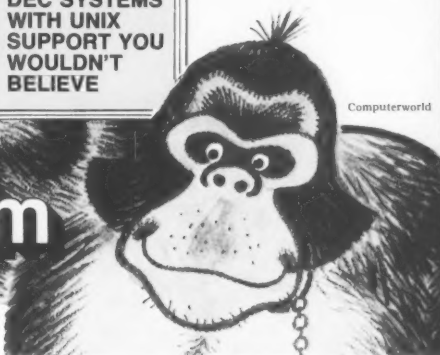
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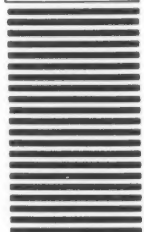
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Version 16 of Dialup Unveiled

LEXINGTON, Mass. — Evans Griffiths and Hart, Inc. has unveiled Version 16 of Dialup, an asynchronous communications package running under RSTE/E on Digital Equipment Corp.'s PDP-11 and Ross/V RSTE/E

simulator on VAX.

Dialup reportedly uses a standard asynchronous terminal line to link its host system to a remote computer system, either via a telephone line or a null-modem connection (if the systems

are close enough together). It supports user-directed dialing through automatic calling units, virtual connection of the user's terminal to the remote system, transmission of Ascii text files to and from the remote system, and, if the remote system is RSTE/E or VMS with Ross/V, block-mode transmission of binary files with CRC16 block checking and the preservation of attributes.

The price of a single CPU license for Dialup is \$1,700. The package is currently available for delivery, according to the vendor at 55 Waltham St., Lexington, Mass. 02173.

Comtech Adds Modem

SCOTTSDALE, Ariz. — Comtech Data Corp. is offering a broadband modem as part of its 500 series of CATV-compatible devices.

The M500 shares common circuitry with the M500C, allowing transmission of high-speed digital data over broadband (CATV) systems with individual data rates of 56K bit/sec to 7M bit/sec available, a spokesman said. Aggregate data rates of 500M byte/sec are obtainable on a single cable.

The M500 was designed to implement up to three full-duplex circuits/8½-in. chassis for locations having more than one data communications usage, according to the vendor.

Features include expandability in the field and the addition of a second, redundant power supply to increase availability in critical applications.

The M500 is available 90- to 120 days after an order is received and is priced at \$1,750 to \$4,650 with quantity discounts available. Comtech is located at 350 N. Hayden Road, Scottsdale, Arizona 85257.

Avanti Releases Data Distributor

NEWPORT, R.I. — A local-area data distributor that is said to operate at up to 9,600 bit/sec asynchronously over unloaded metallic circuits has been announced by Avanti Communications Corp.

The Model 600A reportedly runs in a point-to-point or multipoint mode for up to five miles. Available in desktop or rack-mounted versions, the unit is equipped with lightning protective circuitry, according to the vendor.

A desktop model costs \$285 from Aquidneck Industrial Park, Newport, R.I. 02840.

Infotron Statistical Mux Uses One Transmission Line

CHERRY HILL, N.J. — Infotron Systems Corp. has unveiled an eight-channel statistical multiplexer designed to reduce data communications costs by using just one transmission line to carry data previously transmitted by up to eight lines.

The TD-1344/FYC is intended for applications requiring Military Standard 188-114 electrical interface characteristics. It reportedly uses statistical techniques to transmit only active data inputs, conserving bandwidth. Inputs may be mixed asynchronous or isochronous up to 9,600 bit/sec.

The multiplexer is functionally similar to the vendor's Supermux 480 and is said to eliminate transmission errors. Data is buffered,

checked and if necessary, retransmitted. Sufficient buffer storage is provided so no data is lost, even to outages lasting 10 seconds or more on a fully loaded 9,600 bit/sec line.

The device costs \$6,000 from Infotron at Cherry Hill Industrial Center, Cherry Hill, N.J. 08003.



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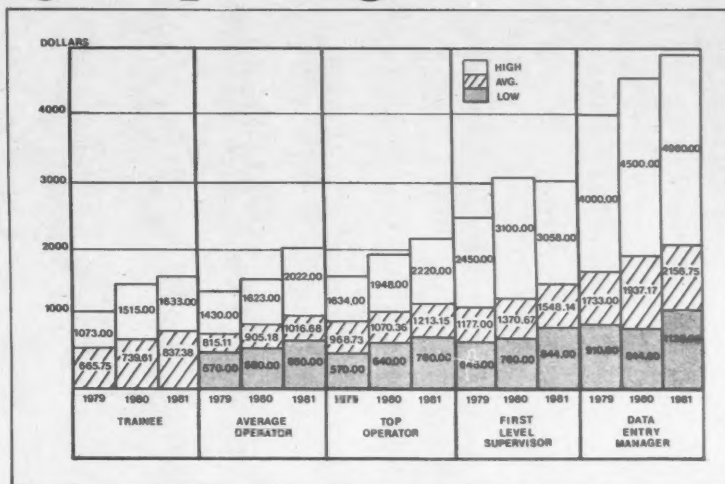
Dema Releases 1981 Survey

Data Entry Wages Up, Budgets Down

STAMFORD, Conn. — Although salaries for data entry operators have increased about 12% in the past year, the average number of operators is declining and data entry is accounting for less of the total data processing budget.

These are some findings of a recently completed 1981 survey just released by the Data Entry Management Association (Dema). This year's survey, which is the third in as many years conducted by the international association, involved 145 companies in the U.S. and Canada. Most of the companies that took part in the survey are in the manufacturing, government or insurance industries, with annual revenues in excess of \$100 million.

One of the most revealing facts uncovered by the survey is that the percentage of funds allocated to data entry from the total data processing budget has markedly declined over the past few years. In 1979, the average amount was about 28%. However, in 1980 this figure declined to about 26% and a year later decreased to a little more than 19%, the survey showed. In fact, 5% of the companies in this year's survey set aside 16% of the total DP budget for data entry while about 35% of the firms budgeted 10% of their total expenditures



Monthly Salaries

for data entry functions.

Although this decrease in the amount of funds for data entry may seem foreboding, it is actually based on an increase in the

productivity of present operators, the survey stated. In charting the average number of keystrokes per hour, the survey found that the average rose 2.5% over 1980 levels for the fastest operator, while the average for the slowest data entry operator increased about 5% in 1981.

Another factor to consider in clocking data entry's decreasing budget is both the expansion of data entry into other fields that do not require keying and the number of companies that now consider word processing as part of the data processing function, the survey said.

Other statistics include a slight drop in the number of incentive systems offered to data entry operators, an increase in the use of "flex-time" work schedules and a slight increase in the number of shops offering four-day workweeks. The average amount of operator absenteeism is also up slightly, while worker turnover has dropped more than a full percentage point from 1980 levels, the study pointed out.

About 6% more data entry operators are unionized over those that took part in Dema's 1979 survey. Fully 15% of the operators in the 1981 survey reported belonging to some sort of an in-company union.

Dema can be reached through P.O. Box 3231, Stamford, Conn. 06905.

HP-Compatible Tape System Offers Tape-Streaming Feature

WESTLAKE VILLAGE, Calif. — Qualex Technology, Inc., a supplier of plug-compatible peripherals for Hewlett-Packard Co. computers, has introduced an updated version of its Group 3000 tape system that features tape-streaming capabilities.

The streaming version of the Group 3000 system incorporates two 16K-byte buffers that allow data to be continuously transferred from disk to tape with gapping done "on the fly," a spokesman said. The triple-density 800-, 1,600- or 6,250 bit/in. or dual-density 1,600- and 6,250 bit/in. tape subsystems were designed to support the HP 3000 Series 30, 33, 40, 44 and 64 processors.

The Group 3000's streaming feature reportedly reduces system dump time, enabling the tape system to perform a 100M-byte write in approximately three

minutes. In a number of benchmarks, Qualex claimed, the Group 3000 system has outperformed competing HP 7970 and 7976 tape systems by providing tape speeds that are more than twice as fast, rewind speeds that are three times faster and streaming data throughput that is 50% greater than the HP units.

The Qualex system also features shorter interrecord gaps that result in system dumps that are 160% faster, as well as a higher rate of data compaction, the spokesman maintained.

The Group 3000 is priced at \$45,500, said to be about 13% less than the comparable HP 7976 tape system.

A maintenance package for the Group 3000 is also available from Qualex, 31220 LaBaya Drive, Westlake Village, Calif. 91362.

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For more information on our laser printer, write for your copy of our product brochure U6644, Sperry Univac, Dept. 100, P.O. Box 500, Blue Bell, PA 19424.

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Bits & Pieces

Building Designers Gain Design, Drafting Turnkey

ZEELAND, Mich. — A Dynamic Design and Drafting (DDD) turnkey system for building designers has been developed by Herman Miller, Inc.

DDD reportedly includes a three-dimensional modeling program that enables designers to walk through a simulated building and interactively analyze design solutions. It also includes a two-dimensional program for creating architectural and interior plans and elevations, the vendor said.

The minimum system configuration consists of a Digital Equipment Corp. PDP-11/24 with 256K bytes of memory, an Evans & Sutherland Multi-Picture System with data tablet and pen, an alphanumeric terminal, 20M bytes of removable hard disk and a high-speed plotter.

Prices range from \$225,000 to \$400,000, a spokesman said from 8500 Byron Road, Zeeland, Mich. 49464.

IMC Distributes Directory For Access to Microform

WASHINGTON, D.C. — The International Micrographic Congress (IMC) is now distributing the "Remote Access to Microform Store: A Guide and Directory," which gives an overview of state-of-the-art systems providing remote access to microform stores.

The report, written by Alan Horder and published by the National Reprographic Center, is divided into two parts. The first describes the main features of remote-access systems and their main areas of application. The second is a directory containing specifications of each of the major micrographics remote-access systems currently offered, together with addresses of suppliers.

Cost of the report is \$20 via surface mail or \$25 airmail. Prepaid orders should be sent to IMC, Publication Sales, P.O. Box 34404, Bethesda, Md. 20817.

Plug-In Monitor Designed For AC Power Troubles

DEER PARK, N.Y. — MCG Electronics Corp. has announced a plug-in monitor that detects problems in ac power.

The unit can be plugged into a standard 120-Vac outlet. If a surge or transient occurs in the power line of at least 200V magnitude and .5M-sec duration, a red light goes on. Subsequent lights go on if the power surge reaches 400-, 600- or 800V, the vendor said.

The monitor costs \$159, the vendor said from 160 Brook Ave., Deer Park, N.Y. 11729.

Series of RS-232 Switches Designed to Improve Space

PROVIDENCE, R.I. — Electro Standards Laboratory, Inc. has introduced its 8250-D Series of EIA RS-232 A, B switches. They are designed to improve computer room by providing the capability to switch input/output ports, peripheral devices and modems.

Models 8251-D, 8252-D, 8253-D and 8254-D each have three 25-pin EIA

connectors on their rear panel. The connectors are labeled A, B and common. Each of the models accommodates a different connector polarity configuration, the vendor explained.

The front-panel selector switch routes all signals from the common connector to either the A or B connector. The switches are data-speed and code transparent, requiring no power.

The switches are priced at \$150 from Electro Standards Laboratory, P.O. Box 9144, Providence, R.I. 02940.

Firm Announces Switch To Standard Carbon Steel

RICHMOND, Va. — Power Distribution, Inc. (PDI) has announced a series of computer power sources manufactured from standard carbon steel rather than other more expensive special materials.

The firm's Model 117 is available in sizes 5kVA to 225kVA and is listed by Underwriters Laboratories, Inc., the vendor said. The device features all of PDI's high-technology electrical power conditioning system, according to the vendor.

The Model 117, available now with a four-week delivery date, costs from \$5,000 to \$10,000.

Power Distribution is located at P.O. Box 3241, Richmond, Va. 23235.

AC Line Conditioners Introduced as Safeguards

PLAINVIEW, N.Y. — Pilgrim Electric Co. has announced the new Voltector Series 6 ac line conditioners to protect word processors; minicomputers; microcomputers; data communications; and medical, scientific, and other microprocessor-controlled equipment against voltage spikes, surges and transients as well as against radio frequency interference.

The Series 6 protects against 500A surges having 10 μ sec rise times and 1,000 μ sec half-amplitude delay times. It also attenuates radio frequency interference between 1- and 1,000 MHz in both the common and transverse modes by more than 60 db, unlike dedicated lines.

The Series 6 ranges in price from \$79.50 to \$119.50 and is available off the shelf from Pilgrim Electric, 29 Cain Drive, Plainview, N.Y. 11803.

Topaz Mobile Unit Claims Power Disorder Protection

SAN DIEGO, — Topaz, Inc. has announced Power Center Plus, a self-contained, mobile power center distribution system. The unit is said to protect computer systems from power disturbances.

The unit uses shielded cables to distribute ac power to computer room components. Additional cables can be installed to accommodate additional hardware. The power distribution system employs a noise-suppressing isolator to provide a minimum of 80 db attenuation of all common mode noise and greater than 40 db attenuation of all transverse-mode noise, the vendor said.

The unit is available in 50Hz and 60Hz models with power ratings ranging from 30kVA to 100kVA. Systems cost from \$16,000, the vendor said from 3855 Ruffin Road, San Diego, Calif. 92123.

Vertel Card Reader Goes From Two to Four Tracks

CLIFTON, N.J. — Vertel, Inc. has redesigned its KB-31 Microloader Magnetic Card Reader/Encoder from a two-track to a four-track simultaneous-reading head.

Accu-Sort Offers Laser Scanner

TELFORD, Pa. — A self-contained medium-speed moving-beam laser scanner has been added to Accu-Sort Systems, Inc.'s family of bar code readers.

Model 50 operates at speeds up to 150 scan/sec and features a real-time dynamically adjustable focusing system for reading bar codes on packages that appear within a 12-in. to 40-in. scanning range.

The scanner and decoding logic are enclosed in a single unit that is designed to operate in industrial environments.

It is also equipped with two serial ports, parallel outputs and an alphanumeric display.

Model 50 costs \$5,800, with 60-day delivery time from 511 Schoolhouse Road, Telford, Pa. 18969.

Compilation By NMA Released

SILVER SPRING, Md. — The National Micrographics Association (NMA) has released a series of articles dealing with micrographics, word processing, computer-aided retrieval (CAR) and optical disk technology.

"Micrographics and its relationship with Word Processing, CAR and Optical Disk," is a collection of current articles from publications indexed at the NMA's resource center, a spokesman said.

The latest NMA offering deals with the automation of information management and is separated into three sections: word processing, CAR and optical disk.

The articles deal with the relationship to and effects of these technologies on micrographics.

The package costs \$20, with a 25% discount to NMA members. Questions should be sent to NMA, 8719 Colesville Road, Silver Spring, Md. 20910.

By redesigning the microloader, Vertel has reportedly doubled its storage capacity and increased the data throughput rate by a factor of four, a spokesman said. The KB-32 is said to have 544 bytes per stripe and can record and read over 2,176 8-bit bytes from a Vertel magnetic stripe K-byte card.

Character load time is 12K byte/min the vendor said, adding that the KB-32 can be connected to a microcomputer through an RS-232 or teletypewriter interface for parameter loading.

The KB-32 costs \$1,353, quantity discounts available, from Vertel, Inc., 125 Ellsworth St., Clifton, N.J. 07012.

OCR Reader Inputs 400 Char./Sec, Based on 16-, 32-Bit PE Minis

MELBOURNE, Fla. — Optical Business Machines, Inc. (OBM) has introduced a minicomputer-based data entry and processing system that can input up to 400 char./sec as well as handle key-to-disk or key-to-tape in a distributed environment.

The Dataflex 16/32 is based on either a 16-bit or 32-bit Perkin-Elmer Corp. minicomputer and incorporates a laser optical character recognition (OCR) reader for data entry. The 32-bit system includes PE's 3210 processor with 512K bytes of memory, PE's OS/32 operating system, a 32M-byte charge coupled device (CCD) disk drive,

an operator's console, OBM's laser OCR-Two reader and a 600 char./sec Florida Data Corp. matrix printer.

The system can handle such high-level languages as RPG-II, Fortran and Basic. In addition it can run PE's Reliance transaction processing software and other communications-oriented products. Applications programming and software support are provided by OBM, a spokesman said.

The basic Dataflex 32 costs about \$179,000 while the price for a 16-bit system begins at \$149,000.

OBM is at 804 W. New Haven Ave., Melbourne, Fla. 32901.

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For Office, In-House Use Xerox Offers Two Printers, Graphics System

NEW YORK — Xerox Corp. introduced two electronic printers for office and in-house printing use and a graphics printing system here recently.

The electronic printers — Models 2700 and 8700 — use laser-image techniques capable of generating a variety of type fonts and sizes and can print up to 12 page/min and 70 page/min respectively,

according to Xerox.

The Model 8700 uses lasers to create images on a photoreceptor. The images are then xerographically transferred from the photoreceptor directly to paper, Xerox said.

The graphics printing system can produce publications with illustrations on 8½ in. by 11 in. paper at printing rates of up to 120 page/min

when used with the Xerox model 9700 printing system, according to the company. Xerox claims that it is also capable of merging scanned line art and photographs with text.

Prices, Availability

The Xerox 2700 is priced at \$18,995 and the Model 8700 at \$212,000. Both will be available in July 1982, ac-

cording to the vendor.

The typical graphics system with a Model 9700 costs \$380,000. It will be available for the Model 9700 in September 1982 and for the Model 8700 in the first quarter of 1983.

More information is available from Xerox Corp., Printing Systems Division, 880 Apollo St, El Segundo, Calif. 90245.

PC Board Gets Eight Data Layers

HARTFORD, Conn. — Gerber Scientific Instrument Co. has introduced a computer-aided printed circuit (PC) board design system that reportedly can display up to eight levels of data and features color graphics and Winchester disk storage.

The PC-800 Model 3 is said to consist of a design console with a 19-in. color graphics display, 20M-byte Winchester drive and an on-screen design software. The Model 3 can be configured with one of four Gerber Scientific photoplotters, a coordinate digitizer and a variety of output devices, the vendor reported.

The system performs tasks such as interactive connect routing, routing traces from level to level, moving a component and its trace points, inserting multiple trace points without changing the start and end points of an original connect, displaying variable grids on-screen and multiple lines between pads, the vendor said.

Differentiated Layers

Layers can be differentiated simultaneously or displayed separately to verify design decisions, according to the firm.

The system generates artwork masters, solder masks, pad masters, silk-screen masters, component drawings, parts lists and bills of material, the vendor said.

The PC-800 Model 3 is available for \$45,000 from the Gerber Scientific Instrument Co., P.O. Box 305, Hartford, Conn. 06101.

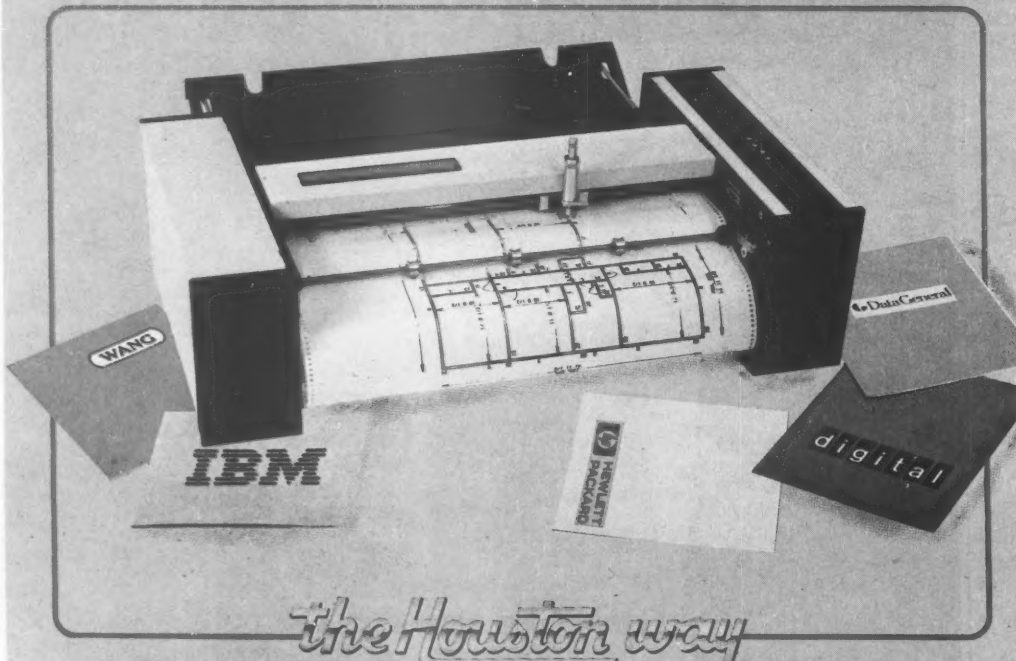


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Multiuser Micro Can Support Up to Four Units

CHICAGO — Gimix, Inc. has introduced a microcomputer-based multiuser computer system that is designed to support up to four user terminals and features Winchester hard-disk storage.

The Model 6809 reportedly features a high-performance Motorola, Inc. microprocessor, 120K bytes of static random-access memory, 19M bytes of Winchester disk drive, 1M-byte of floppy disk storage and four serial I/O ports. Memory is expandable to 632K bytes. Additional memory, mass storage and I/O for more terminals are optional.

Included with the system is OS-9 Level 2, a Unix-like, multiuser, multitasking operating system; and the OS-9 debugger, text editor and assembler, a spokesman said. Languages available under this operating system include Basic09, Pascal, CIS Cobol and C language. Finally, the system also has a monitor/operating system combination, which is basically a single-user 56K-byte operating system.

The Gimix system, which will officially debut at the National Computer Conference this June, costs \$8,998.09 from the firm at 1337 W. 37th Place, Chicago, Ill. 60609.

High-Speed Micro Boasts Operating Systems Switch

CHATSWORTH, Calif. — Integrated Business Computers, Inc. (IBC) has introduced a high-speed multiuser microcomputer system that is said to be two to three times faster than its competitors and has the ability to swap operating systems at the flick of a switch.

The IBC Super Cadet is built around a high-speed Zilog, Inc. Z80B 6 MHz central processor and incorporates such things as an intelligent disk-buffer and a storage module device (SMD) hard disk controller to reportedly boost system performance. The system was designed to compete against multiuser systems offered by such companies as Altos Computer Systems, Inc. and Onyx Systems, Inc.

The Super Cadet uses 64K-bit random-access memory chips arranged on a single board and has up to 256K bytes of memory. The system includes 10 ports, nine of which can be used to support simultaneous users and one for a printer. The ports can also handle large SMD disk drives and reel-to-reel or cartridge magnetic tape.

The multiuser system uses high-speed Mitsubishi floppy and hard disk drives, ranging from 1M-byte floppy disks to 50M-byte 8-in. Winchester models. The Japanese disks reportedly utilize voice coil

actuation rather than the slower stepper motors to speed seek and access times. In fact, the dual-sided double-density floppy disks included with the IBC system have seek times that are twice as fast as the more common Shugart Associates, Inc. Model 800 unit, the spokesman claimed.

Unlike most competing systems, which rely on direct memory access (DMA) circuitry to handle disk I/O, the IBC system incorporates an intelligent disk buffer that allows the CPU to continue processing during disk operations. With DMA, the CPU reportedly becomes inactive during I/O activities. In addition, the Super Cadet system is totally vector interrupt driven, the spokesman noted. Since the Zilog chip cannot handle high-speed data from the system's SMD disks, the Super Cadet features an SMD hard disk controller interface that is said to be twice as fast as the Shugart SA1000 interface offered on competing systems.

Memory Sizes

Finally, the Super Cadet offers the user the ability to switch from one operating system to another by switching memory banks and varying memory bank sizes. Users can jump from such multiuser operating systems as Digital Research, Inc.'s MP/M and Phase One Systems, Inc.'s Oasis by the flick of a switch, the spokesman claimed. Memory reconfiguration is reportedly handled by a series of on-board high-speed programmable read-only memory chips.

A Super Cadet system with 64K bytes of memory, the Oasis operating system and 2M bytes of floppy disk storage costs \$5,595. Systems with hard disk storage range in price from \$10,595 for a unit with 1M-byte of floppy and 20M bytes of hard disk to \$15,975 for a system with a floppy drive, 50M bytes of 8-in. hard disk and a tape cartridge backup. The system is available in either desktop or rack-mountable versions. Additional information on the system and a list of qualified dealers is available from the firm at 21592 Marilla St., Chatsworth, Calif. 91311.

Micro Runs Faster, Addresses More Memory Than 16-Bit Chip

PALO ALTO, Calif. — A microprocessor that is said to perform up to six times faster than a 16-bit chip and address 16 times more physical memory has been developed by Intel Corp.

The Intel 80286 reportedly has a physical memory capability of 16M bytes and a virtual memory space that handles up to 1G byte of memory/task. It also has, on the same chip, a flexible multilevel protection mechanism and memory management capabilities, a spokeswoman explained.

The 80286 incorporates a "pipelined" ar-

chitecture that allows the processor to do a variety of different task at the same time, reportedly without sacrificing performance. For example, the chip can fetch an instruction while its arithmetic and logic unit (ALU) is executing a previous one. Up to three instructions can be fetched and fully decoded during an extended ALU operation, the spokeswoman observed.

The chip is upward compatible with Intel's 8-bit 8088 and 16-bit 8086 microprocessors. The vendor is located at 12675 Research Blvd., Austin, Texas 78766.

Mini Bits

Hard-Disk Subsystem Offered

SANTA CLARA, Calif. — Laredo Systems, Inc. has announced the Model LS525 hard-disk subsystem, which offers up to 5M bytes of storage.

The subsystem is currently available for the Radio Shack TRS-80 line of microcomputers. It employs a proprietary controller that reportedly features access speeds about 10 times faster than floppy disk subsystems. The hard disk can be partitioned into up to four parts at the user's option using a special version of the firm's LDOS software.

The units cost from \$1,995. Host adapters for the TRS-80 Models I and III cost \$250, the vendor said from 2264 Calle de Luna, Santa Clara, Calif. 95050.

Memory Module Fits DEC CPUs

HOUSTON — Computer Extension Systems, Inc. has introduced the Model VML 128P Memory Module, which provides up to 256K bytes of dynamic parity memory for Digital Equipment Corp. LSI-11 and PDP-11/03 processors.

Contained on a dual-height card, the unit allows the processor to locate and iso-

late an error within a 2K-byte segment of memory, using an on-board parity control and status register, the vendor said.

A large-scale integrated circuit provides all random-access memory timing from a crystal-controlled reference frequency. Parity and 22-bit addressing is compatible with the DEC LSI-11/23 and PDP-11/23 processor only, the vendor said.

The unit price of the module is \$1,250 or, with an LSI 11/23 processor and memory management unit, \$3,150 from the vendor, 17511 El Camino Real, Houston, Texas 77058.

North Star Cuts Prices Up to 50%

SAN LEANDRO, Calif. — North Star Computers, Inc. has cut retail prices by up to 50% on its Horizon line of microcomputers, memory boards and applications software.

The purchase price on the firm's multiuser processor has been cut 20% and the unit now costs \$3,599, down from about \$4,300. The prices on the firm's memory boards have been cut 36%. A 64K-byte random-access memory board now costs \$699, down from \$1,099.

Finally, North Star application programs have been cut as much as 50%.

The vendor is located at 14440 Catalina St., San Leandro, Calif. 94577.

Personnel Tracking System Out

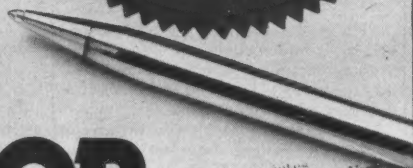
EDISON, N.J. — EDP of America, Inc. has introduced a turnkey personnel tracking and management system based on either Honeywell, Inc. or Microdata Corp. minicomputers.

The system is designed to display a variety of employee information including employee profiles, insurance data and salary histories. Proprietary data can be password protected, a spokesman said. The system can support up to 11 terminals, up to 256K bytes of memory and up to 150M char. of disk storage.

The basic system configuration sells for \$43,750 and includes the software, a Honeywell CPU, 20M char. of disk storage, one CRT, 64K bytes of memory and a 150 char./sec printer. It is available with either Honeywell's Model 1000 or Microdata's Reality or 32-bit Sequel computers from EDP, Raritan Plaza II, Edison, N.J. 08837.

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Remote, Local Links

Message System Doubles Its Usefulness

LOUISVILLE, Ky. — In addition to saving money on long distance phone calls, a message processing system has increased its utility at the Kentucky Farm Bureau Mutual Insurance Co. here by doubling as an electronic mail system.

The insurance company first employed Omnicom, On-Line Software International, Inc.'s communications software, over dedicated telephone lines to

link its 11 remote offices for on-line claims processing. That is where the long-distance savings were gained. "Because of its superior message-routing capabilities, we are learning to use Omnicom more and more as an electronic mail system within our corporate headquarters," according to Bruce Knowles, Kentucky Farm Bureau Mutual Insurance assistant vice-president of operations.

"We are beginning to use it internally as an electronic mailbox for routine administrative information such as scheduling meetings or distributing memos.

"One of the system's nicest features allows Omnicom to keep track of messages so that a recipient can do a quick inventory of unviewed messages throughout the day. Most people here routinely check it once

an hour or so for messages although someone in the claims office, who receives a battery of messages each day, may check as often as every 15 minutes or so.

"One of the beauties of electronic message switching is that you can use the auto display for a constant flow of messages or you can choose when you want to receive your messages. There are fewer telephones ringing and important work is not interrupted for routine messages, which could just as easily have waited for 15 to 20 minutes until the recipient was free," Knowles said.

The Omnicom "alternate terminal" feature was designed to allow a message recipient to direct all messages to an alternate terminal if his is out of service or he is unavailable. The system will also keep control of incoming and outgoing messages separately and allow a person to search through old messages by either message number — a unique number routinely assigned by the system to each message — or in chronological order.

This search feature saves time often spent with other electronic systems paging through days worth of old messages before a particular message is located, Knowles said. "Right now, to

(Continued on Page 76)

Stand-Alones, Distributed Nets

Terminals Gain Unix-Type Feature

MANSFIELD, Mass. — Codex Corp. has unveiled a terminal system offering a Unix-type operating system called OS-9. The operating system is designed to let users concurrently perform

such applications as data entry, on-line inquiry, time-sharing, DP and word processing.

The terminal system — CDX-268 — is designed for users just starting in the areas of distrib-

uted processing and office automation. The CRT terminals feature tilting and rotating screen, detachable keyboard and green or amber character displays.

The terminal system is available in single or multiuser configurations, has both disk and diskette storage systems and offers a variety of printers. It also offers compatible communications protocols, including IBM 3270, 2780/3780 and teletypewriter. Languages offered include Cobol and Basic.

Diagnostic control is built in and the terminal system reportedly has remote monitoring and debugging capabilities.

It costs between \$10,900 to \$20,000 from Codex at 20 Cabot Blvd., Mansfield, Mass. 02048.



CDX 268 Terminal System From Codex Corp.

Harris Offers CRT Terminal With 'Muse' Word Processing

FORT LAUDERDALE, Fla. — Harris Corp. is offering a CRT terminal featuring its Muse word processing functions.

The Model 8686 is also said to feature character and line editing, memory and line locks and five special independent visual attributes: normal, reverse video, blink, underline, half intensity and security fields. Its 12-in., antiglare, P42 phosphor green and black screens are formatted for 24 lines with 80 char./line.

A 25th line is provided for status display. A 128 Ascii character set is formed within an 8-in. by 8-in. dot matrix with descenders on lowercase characters, the vendor said.

Other standard features include a time-of-day clock, self-diagnostics with error indicators and 11 graphics symbols for line drawings.

The CRT terminal with word processing functions costs \$1,950.

Harris is at 2101 Cyprus Creek Road, P.O. Box 6200, Fort Lauderdale, Fla. 33310.

Textpro WP System Gives HP 3000 Full-Screen Editing

OAKLAND, Calif. — Pantech, Inc.'s Textpro word processing system now has full-screen editing for the Hewlett-Packard Co. HP 3000 computer.

The Bscreen addition to the system reportedly allows the user to do page-oriented editing on most of HP's block mode terminals. Features of the screen editor include labeled function keys, numerous menus and "help" facilities, global search and replace, decimal tab alignment, underlining, boldfacing, subscript and superscript.

Other features include center tabbing, proportional spacing

and automatic hyphenation. Textpro costs \$7,500 from Pantech at 89 Mountain Valley Road, Oakland, Calif. 94605.

NBI WP Units Get CP/M

BOULDER, Colo. — A CP/M compatibility option is available for personal computing functions on the NBI, Inc. Docuwriter and Model 3000 word processors.

The package will allow users of the Docuwriter and System 3000 to accomplish financial planning, billing and other applications when the systems are not being used for word processing, according to the ven-

11/750 computer systems, features several enhanced editing capabilities: on-screen highlighting, change bars designed to flag changes, global search and replace and column operations that move, insert, delete or add amounts while still in the editing mode.

Users running Word-11 with DEC RSX-11M operating systems will receive a free update in April. New customers with equipment using VAX/VMS can buy the software for \$9,500; for equipment using RSX-11M and RSTS/E the package costs \$7,500 and \$8,500, respectively.

Data Processing Design is at Suite F, 181 W. Orangethorpe, Placentia, Calif. 92670.

The option supports software available from Lifeboat Associates and is contained on NBI-compatible diskettes marketed by Lifeboat, the vendor said.

The option will be available in September at a cost of \$495 with a \$10 monthly marketing charge.

NBI, Inc. can be contacted through P.O. 9001, Boulder, Colo. 80301.

Office Automation Book Covers Latest DP Trends

WASHINGTON, D.C. — A book on office automation entitled *Word/Information Processing Concepts: Careers, Technology and Applications* is being distributed by the International Micrographic Congress (IMC).

The book provides current, comprehensive information on the latest trends in word/information processing. It integrates word processing with other technologies such as data processing, photo composition, electronic mail, telecommunications, micrographics and electronic record storage and retrieval. Included are performance objectives, review questions and case problems.

Contents include word and infor-

mation processing, development, careers and technologies, input and output, processing and storage, alternative methods of input and output distribution, telecommunications systems, planning and organizing the change, staffing the area, directing the staff and the industry case studies.

Published by John Wiley and Sons in 1981, the book has 387 pages and is indexed, illustrated and hard-bound.

The book costs \$28 via surface mail, \$39 airmail. Prepaid orders should designate IMC-113 and be sent to IMC, Publications Sales, P.O. Box 34404, Bethesda, Md. 20817.

Adabas Users Gain Mail Access

HOUSTON — An electronic mail system for users of Software AG's Adabas data base management system is available from Lone Star Software, Inc.

Mail has the typical features seen in electronic mail systems: send, read, forward, reply and discard. It also has special features that allow the user to file mail in categories, according to the vendor. Later, the user can search the categories to review filed mail and then read, discard or file in new categories.

Mail costs \$2,500 from Lone Star, which can be reached at Suite 540, 507 E. North Belt, Houston, Texas 77060.

Package Doubles As Mail System

(Continued from Page 75)

avoid overloading our system, we use Omnicon to store messages for six months," he added.

"We recommend that if someone wants a message permanently stored, that it be directed to a printer and filed manually. For example, if the underwriting department gives someone the authority to take some action, that person may want to keep a permanent record of the message giving him that authority. Right now none of our agents have printers, so if they want a hard copy of a message they use Omnicon to request one from the home office by return mail," Knowles said.

Operation of the system is handled by a terminal administrator in charge of solving any problems the system might develop at the insurance firm. If a terminal is inoperative, the administrator instructs the system to send all messages for that terminal to a backup terminal. If there are problems with any of the communications lines, the control operator is responsible for correcting the situation.

Built-In Security

Knowles reported that the system has built-in security because the message owner is assured of accurate delivery. The message reaches the recipient instantly, can only go to where it has been sent and cannot get lost.

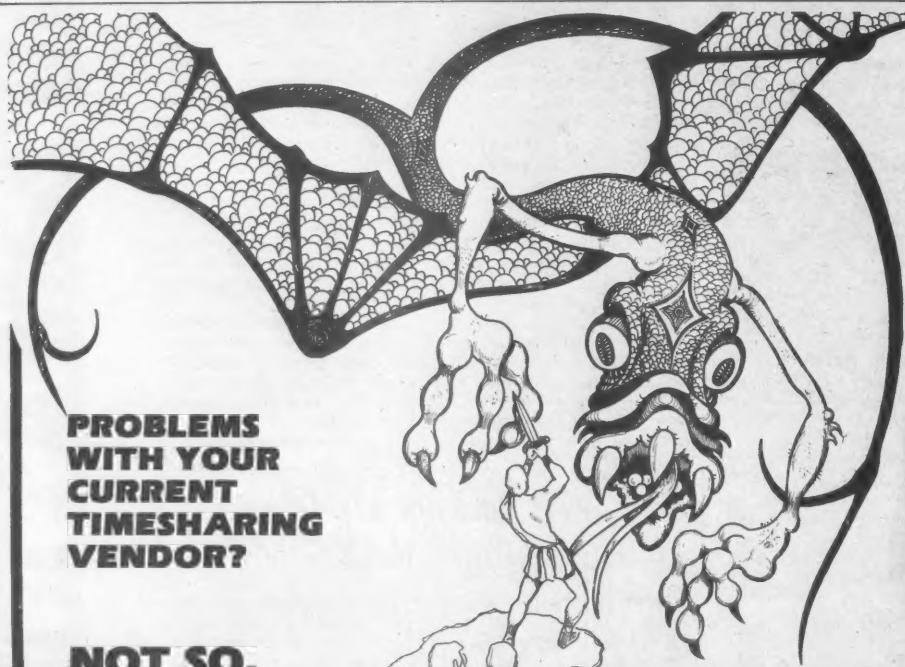
Omnicon messages are filed so that only the two owners, the sender and recipient, have access to them. Also, messages can be given more important treatment by assigning them message priorities. An Omnicon system status lets the sender know where his message stands — has it been received or is it on hold? The system lets the sender change his mind, adding more people to the list of recipients or canceling a message altogether.

"I report to the vice-president of operations, usually a very difficult person to reach by telephone," Knowles said. "Now, I can send him a message and just as soon as he sees my message, he sends me a response. Suddenly we are communicating more often, more accurately and at a greater convenience to us both."

"Omnicon is so easy that anyone can use it, and it allows our company to do electronic message processing with tools we already had, through CICS and our regular terminals. There was no need to buy specialized workstations and no CICS system modifications are necessary to run [the electronic mail processing]."

In the future, the company hopes additional agency offices will be installing terminals and using the system. "Our largest agencies can often spend as much as \$600 to \$700 a month for routine long-distance phone calls to our corporate headquarters," Knowles explained. "But for about half that cost each month, we offer an agent a terminal, the communications lines and everything else he needs to go on-line."

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Two OPM Principles Plead Guilty To Fraud Charges

NEW YORK — Just a year after OPM Leasing Services, Inc. filed for protection with the bankruptcy court, the two principles of the firm pleaded guilty to federal criminal charges of defrauding lending and other institutions out of more than \$200 million through the writing of phony computer leases [CW, March 23 and Nov. 23, 1981].

Mordecai Weissman and Myron Goodman pleaded guilty to the charges last Dec. 17, but their pleas were not unsealed until March 12. Five other former executives had pleaded guilty to similar charges on the same December date.

According to the federal

criminal information document, the tactics used by OPM included obtaining loans from two or three banks for the same lease for the same equipment, obtaining loans on the basis of leases altered to show larger rentals and equipment that were actually involved, and obtaining loans on the basis of nonexistent equipment.

The federal document further stated that the conspirators paid off various individuals at lessee companies and an employee from IBM, who supplied blank IBM invoices and other documents needed to create fictitious ownership documents.

The federal investigation is continuing.

To Avoid 'Bitter' Fight, U.S. Must Press Japan To Open Trade: Study

By Robert Batt

CW West Coast Bureau

BERKELEY, Calif. — The U.S. must pressure Japan to open itself up to increased competition in the computer industry if a bitter struggle between the two nations is to be avoided.

That is the main conclusion of a major study of the semiconductor industry carried out by researchers here at the University of California and sponsored by the U.S. Congress.

The 183-page report, "International Competition in Advanced Industrial Sectors: Trade and Development in the Semiconductor Industry," paints a picture of unfair Japanese competition, which has given that country a strategic stranglehold on the semiconductor industry. This industry, researchers said, "is at the heart of the transformation of industrial life being produced by information processing technology."

American policy, the report said, must actively pursue open trade in electronic goods. The obstacles to free trade, it asserted, go beyond the direct protection of the domestic market. They are fundamentally entangled with policies of government procurement, industrial promotion and the regulation

of competition.

"Trade negotiations will have to focus on the actual workings of trade and competition in specific sectors. In semiconductor trade, the failure to resolve these problems will lead to a mercantile scramble for national advantage," the report warned.

According to the Berkeley team, the major problem is Japan. The competitive battle for leadership in the chip industry has become a fight between American and Japanese producers fought out in American and European markets.

"The main threat of Japanese policy over the years has been to manipulate access to the domestic market as a means of neutralizing the strength of American firms."

Japanese governments, the report claimed, have clearly and forcefully restricted access to domestic markets by foreign manufacturers. While competition among Japanese vendors is real and intense, it is controlled to assure growth of the electronics industry as a whole. Intercompany specialization serves to protect the home market.

"As long as the Japanese market is closed off from outside competition, the terms of competition in world markets are biased toward Japanese strengths and against American strengths," the report said.

Such arrangements, the researchers noted, mean the Japanese are able to mount an intense challenge in the volume of production of commodity products that may prevent American firms from using their superior technological skills and entrepreneurial strengths.

(Continued on Page 80)

Intel, Intersil and GE Sign Five-Year Exchange Pact

SANTA CLARA, Calif. — Intel Corp., Intersil, Inc. and General Electric Co. have signed a five-year technology exchange pact.

Under the arrangement, Intel will provide its high-density metal oxide semiconductor process and masks and design information on its 80C51 single-chip microcomputer to Intersil. Using this technology, Intersil, a wholly owned subsidiary of

GE, will manufacture peripheral circuits and GE-designed custom products.

In return Intel will receive the design information needed to fabricate those products. Intel, in exchange for the technology, has reportedly received a promise of a certain amount of manufacturing business from GE and will be licensed as a second source for GE products built around the Intel technology.

First Quarter Results

Honeywell Expects Revenue Drop

MINNEAPOLIS — Honeywell, Inc. has disclosed that first-quarter revenues from its computer business will be below expectations, resulting in a "significant adverse effect" on earnings for the quarter.

The firm reported the drop in computer revenues was caused

by requests for slow delivery schedules by end users and distributors of the firm's Level 6 minicomputer products.

The Minneapolis-based mainframer also disclosed it will no longer include profits or losses from its 47%-owned French affiliate CII-Honeywell-Bull, Inc.

With losses of about \$72 million last year, the French firm has had a draining effect on Honeywell's bottom line.

Honeywell reported that negotiations to reduce its equity ownership in CII-Honeywell-Bull from 47% to 19% were continuing.

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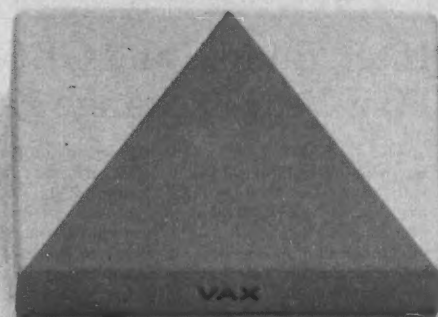
No single universal standard has emerged. Nor is one likely to. There are simply too many diverse networking environments, each fulfilling specific, mutually exclusive needs.

That's why Digital is committed to supporting and, in fact, actively promoting the more important standards now surfacing in the various environments.

Our goal is to offer our customers a range of standards to achieve any combination of networking objectives. And we've been pursuing that goal for many years.

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When we first developed our networking architecture, we understood the need for flexibility.



We consciously adopted an architectural strategy that would allow our networking software to

work freely with a wide range of protocols, including some that didn't even exist at the time.

The success of that strategy is now becoming apparent. As more vendors enter the networking field, Digital is uniquely positioned to offer compatibility with the emerging protocols. We've gone farther than anyone to assure that your options are open.

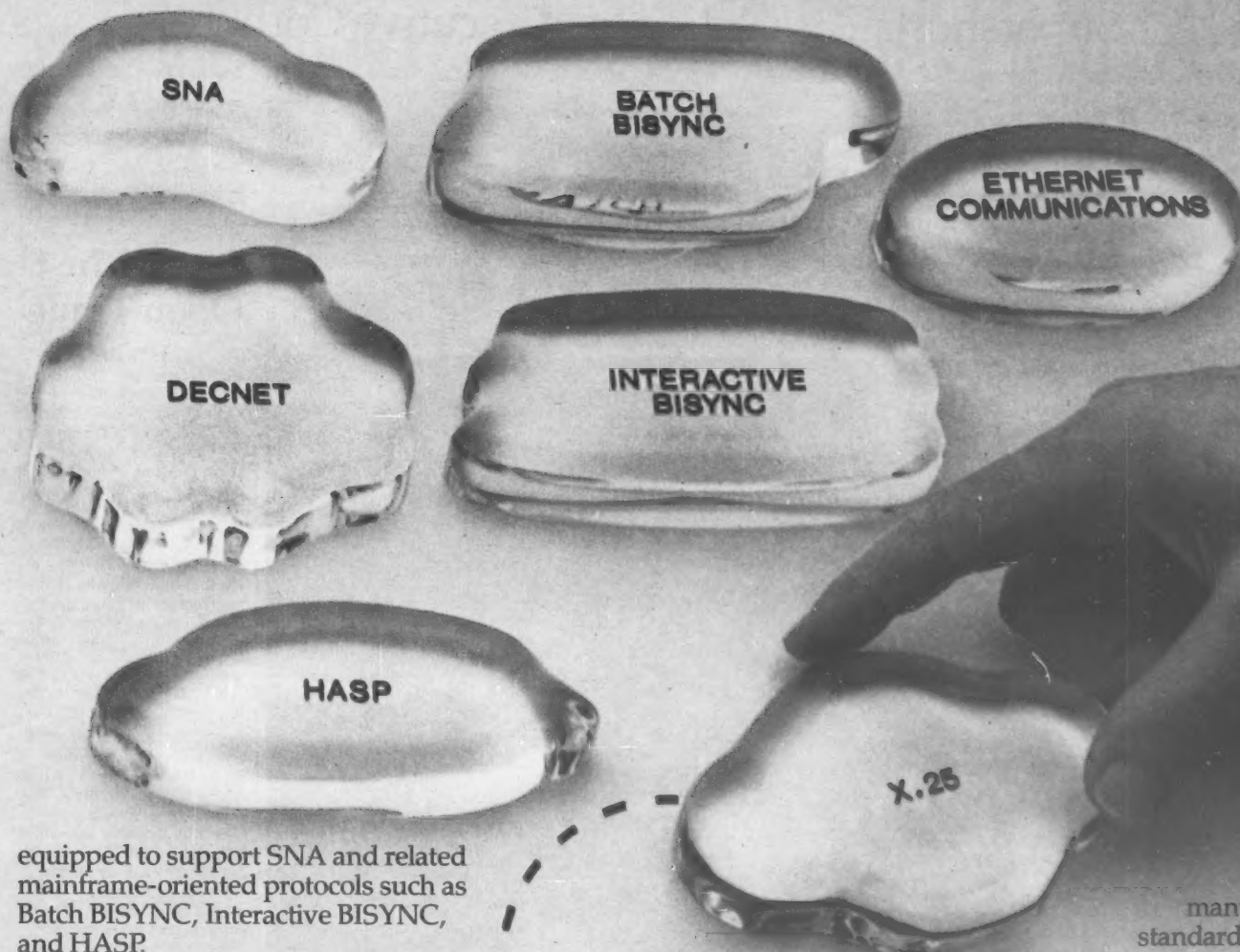
X.25 and other public networks.

Digital offers the X.25 protocol for use with public packet-switched networks such as Datapac (Canada), Transpac (France), and PSS (U.K.).

But when used with our computers, X.25 is much more than a simple link. We can provide you with the higher-level protocols that will take your systems beyond mere communications and into the sophisticated functionality that has made us a leader in networking software.

Hierarchical networks.

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equipped to support SNA and related mainframe-oriented protocols such as Batch BISYNC, Interactive BISYNC, and HASP.

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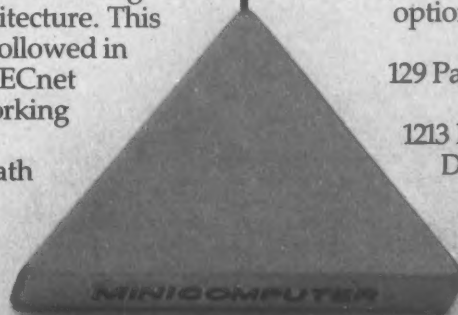
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Supershots

Varian Associates, Inc. announced the reorganization of its Extrion Division in Gloucester, Mass., to form a new semiconductor equipment division called the Lithography Products Division.

NCR Corp. has established a Corporate Product Control Division that combines all functions for effective worldwide inventory man-

agement, order processing and product distribution.

Dataroyal, Inc. has entered the printer retail/dealer market by introducing a dealer support program.

Xerox Corp. has signed an agreement with Siemens A.G., a West German electronic manufacturer, to jointly develop and market integrated office system.

William G. Moore Jr. has been elected president and chief executive officer at Recognition Equipment, Inc. He succeeds Jay Rodney who recently resigned.

Robert Dryden has been promoted to president of Boeing Computer Services Co., a division of Boeing Co.

Samuel Andelman has been named chief operating officer of LTA Computer Services, Inc., a new subsidiary

of Lloyd-Thomas/Coats & Burchard Co.

Douglas Davidson has been appointed executive vice-president of Science Management Corp.

Speakeasy Computing Corp. has hired Richard Dym as vice-president of marketing.

Six newly appointed vice-presidents at Data Resources, Inc. are Christopher Caton, Harvey Cohen, Stephen

Smith, David Stookey, Stanley Wright and David Wyss.

John Kilgore has been appointed assistant vice-president of Logic, Inc.

James Marshall has joined Three Rivers Computer Corp. as vice-president of engineering.

Executive Corner

Japan Must Open Trade

(Continued from Page 77)

What can the U.S. do to counter this threat? First, the report said, domestic policy should assure that shortages of manpower, finance and research and development do not constrain the expansion and competitive position of the American segment of this worldwide industry. The U.S. government should provide the infrastructure to permit industrial expansion and make the markets work more effectively.

Gaining Edge

Competitive position is gained by product differentiation and the management of sophisticated production systems, the researchers said. The relative strength of the U.S. and Japanese computer industries will be significantly affected by differing national capacities to develop and apply these electronic component technologies.

The U.S. problem is that it has so far failed to combat Japanese policies to sponsor the development of a computer industry sector slanted towards its own competitive strengths and away from the relative advantage of American firms in market development and innovation.

"The general policy question is where the American government can and ought to respond to political efforts to reshape markets."

The report concluded: "The quick end to discrimination rather than a slow erosion of barriers to American entry in Japan should be the goal of our policy, and the very fact of monitoring should speed the opening of the market."

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The most powerful of these, the 48-bit Harris 800, won out over mainframe competition to become the center of Rotterdam's new interactive time-sharing system for scientific applications. With more than 350 users providing key municipal services, the city's system is the largest, most sophisticated installation of its kind in Europe.

For information on Harris leadership in interactive design, as well as the versatility of its high-performance super-

minicomputers, contact Ralph Mele, National Sales Manager, Harris Computer Systems Division, 2101 West Cypress Creek Road, Fort Lauderdale, Florida 33309 (305) 974-1700.



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As Information Proliferates

Masstor Finds Data Storage Lucrative Market

By Robert Batt

CW West Coast Bureau
SUNNYVALE, Calif. — The handling of information and data is likely to emerge within the next decade as one of the most crucial corporate functions, according to many data processing executives. Part of this function is the ability to adequately store data.

For a company like Masstor Systems Corp., the relationship between computer power and storage is providing a lucrative market niche at a time when many companies in the industry are feeling a recessionary pinch. In January, the company launched its first large-capacity cartridge-based data storage device aimed at the IBM and IBM plug-compatible manufacturer marketplace [CW, Feb. 8].

According to Erik Salbu, the company's Norwegian president, the new M860 MSS (Mass Storage System) provides 55% more power than IBM's 3850 MSS at almost half the price. A typical configuration costs \$450,000.

The company's first shipment went to Control Data Corp. under an OEM agreement by which CDC has access to the M860 for possible use with its large computer systems. A second system was bought by Brookhaven National Laboratory, Long Island, N.Y. Volume shipments, however, are not expected until the second half of this year.

Nevertheless, Masstor

claimed there has been a high level of interest by both the end user and OEM communities with more than 40 organizations sending representatives to a recent product presentation.

One of the reasons for the high level of interest is that the M860 possesses a different architecture than IBM's 3850, with more of a disk element than the IBM system. Masstor also claimed IBM's device is a large mechanical product, difficult to maintain, while the M860 is smaller and simpler to handle or enhance.

In addition to the M860, the 5-year-old company also supplies a shared virtual storage system for the management of large amounts of data, a high-speed data network that reportedly permits high-speed exchange of data between computers of different vendors and various peripheral equipment such as an automated tape library.

"We are concentrating in both the large capacity equipment business and the network systems area," Salbu said. So far the strategy appears to have paid off with growth doubling every year since the company started.

"Until now, the company has been in a continuous stage of development. This will be our first real year of volume shipments," Salbu added.

Fundamental to Masstor philosophy is that there is a strong relationship between computing power and the

amount of data used. With the world becoming more on-line and interactive, Salbu asserted that a higher level of storage is required.

The company also is speculating that centralized and distributed processing will continue to coexist. This, Salbu said, imposes a set of requirements on manufacturers in terms of the ability of systems to communicate with machines from different vendors and to be able to do so at high speeds.

Masstor sees opportunities in high-performance networks that transfer large amounts of data. "This market is growing at around 15% per year and represents around 5,000 to 6,000 installations worldwide," Salbu said.

Masstor believes with such a market potential it can become a big company within a few years, although it will not reveal its target. However, Salbu estimated that the products already in place give the company machines for rapid growth. He claimed mass-storage-device technology has "a tremendous amount of mileage in it." The technology possesses a

factor of 20 in the density compared to a density factor of around three for disk technology, he said.

The company also expects to widen its horizons by supplying more interfaces to different vendor's equipment. Currently its networking interface products address IBM and Sperry Univac equip-

ment. In the near future the company expects to offer interfaces for Honeywell, Inc., CDC, Digital Equipment Corp. and Cray Research, Inc.

"We don't have to look beyond our present product lines to see we have significant growth potential," Salbu said.

Lightning is limited, but only by your imagination.

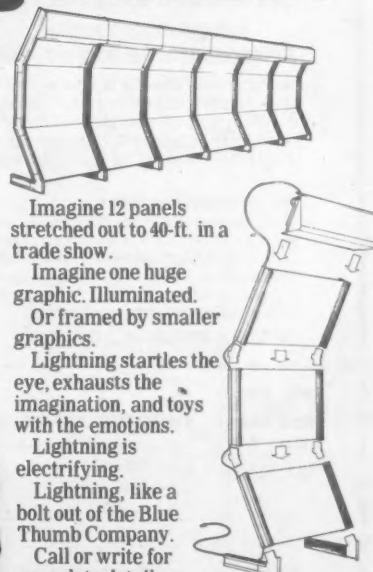
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Foreign Orders & Installations

Zentec Corp. has received a \$1 million contract from Computer Consoles, Inc. for Zentec Intelligent Terminals, to be used as part of Computer Consoles' office automation system called Office Power.

Hitachi, Ltd. of Tokyo has entered into an agreement with Digital Research, Inc. to develop the CP/M Operating System and various application languages for the 68000 microprocessor.

Planning Research Corp. has been awarded a 30-month, \$5.3 million contract by the U.S. Air Force's Rome Air Development Center to continue its work on the Korean Air Intelligence Systems.

Ontel Corp. has reached a nationwide third-party maintenance agreement

with the Standard Register Co. of Dayton, Ohio.

Aydin Corp. has received a \$3.2 million order for a microwave communications and control system from Sui Gas Transmission Co. in Karachi, Pakistan.

New orders at Sperry Univac include one from Japan's Kiyo Bank Ltd. for the \$7.8 million 1100/82 multiprocessor computer; an order from Japan's Taisho Marine & Fire Insurance Co. for the 1100/61 system; another from the Belgian Ministry of Social Welfare for the \$1 million 1100/60 computer system; three orders for the System 80 from Anglo American Property Services of Johannesburg, S.A.; the French Bank, also in Johannesburg; and finally the Wollongong City Council of New South Wales, Australia.



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Contracts & Pacts

Jamesbury Corp.'s wholly owned subsidiary, Decitek Corp., has completed the sale of its paper-tape-reader product line to several members of the subsidiary's management team and an entrepreneur. The purchaser has assumed the name of Decitek Corp. and will continue operations at the existing facility located at 129 Flanders Road, Westboro, Mass.

First Maryland Services Corp. has entered into an agreement with Shared Electronic Systems, Inc. to work on the joint development of an electronic funds transfer link for the financial institutions serviced by First Maryland.

Delta Group, Inc. has been appointed distributor of XL40 minicomputer systems in the Western sales region by the Data Systems Division of Per-tec Computer Corp.

Semiconductor Circuits, Inc. (SCI) of Windham, N.H., and ETA Electric Industry, Ltd. of Japan have announced a collaborative effort to distribute ETA's product line in the U.S. through SCI.

Western Digital Corp.'s WD1000 single-board Winchester hard-disk controller/formatter design has been selected for use in major new systems by both Tandy Corp. and Televideo Systems, Inc.

Anadex, Inc. has been awarded \$2.8 million in contracts from Moore Business Systems, Inc. and Coulter Electronics, Inc. for its DP-9001 and DP-9501 high-resolution dot-matrix printers.

Voest-Alpine AG of Austria will distribute, market and support Computing Capabilities Corp.'s Insight II software in Austria, Bavaria and German-speaking Switzerland, under the terms of a recent pact.

Indeserv has signed agreements with five new equipment manufacturers for contract field service for its products. The five companies are Infoscrite, Inc.; Mastiff Systems U.S., Inc.; Plexus Computers, Inc.; Smoke Signal Broadcasting, Inc.; and TKS Corp.

Rockwell International Corp. has licensed Nitron, Inc. to produce standard Rockwell-Collins telecommunication devices.

Tandem Computers, Inc. has contracted to purchase \$18.2 million worth of Dataproducts Corp. band and high-speed matrix printers for use in Tandem Nonstop computer systems.

Computer Terminals Systems, Inc. has been awarded a \$1.81 million contract from Raytheon Data Systems, a division of Raytheon Corp., which calls for the building of Airline Boarding Pass and Airline Ticket Printers for delivery during the first half of 1982.

Bunker Ramo Information Systems, an operating unit of Allied Corp., has signed an OEM agreement with Intertel, Inc. The pact

calls for a series of Bunker Ramo's modems and communications network options in the Bank Control System 90 product line, used for branch bank automation.

Ramtek Corp. has won a follow-up contract valued at \$8 million for the use of its graphics and imaging system in computer-aided tomography scanners manufactured by General Electric Co.'s Medical Systems Operations.

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A228

Orders & Installations

Eeco, Inc. has been awarded a contract by the St. Regis Sheraton Hotel in New York City for the installation of an Eeco 2100 hotel management computer system.

New orders for the Sperry Univac System 80 computer were received from Morris Bean & Co. of Yellow Springs, Ohio; LNR of Hauppauge, N.Y.; Gulton Industries, Inc. of East Greenwich, R.I.; the City of Layton, Utah; and Pioneer State Mutual Insurance Co., of Flint, Mich.

Art Iron, Inc. of Toledo, Ohio has signed a five-year agreement with Informatics, Inc. for complete Distribution IV services, including a distributed data processing system.

Expansions

Comserv Corp. plans to construct a four-story, \$15 million headquarters building in Eagan, Minn. to consolidate all of the company's functions.

Vertex Systems, Inc. has moved to new offices at "The Woods" business complex, 998 Old Eagle School Road, Wayne, Pa. 19087.

Baldwin Data Services will soon occupy a new computer center in the Denver suburb of Westminster. The new site will be used to provide DP services to the parent company, Baldwin United Corp., as well as to outside customers.

Study Sees \$7.2 Billion Industry Emerging As Small Banks, Others Install Turnkeys

NEW YORK — A \$7.2 billion industry will emerge during the next decade, as smaller banks and other financial institutions install turnkey minicomputer- or microcomputer-based systems to convert manual procedures to automated in-house operations, according to a study on small business computers in retail banking by Frost & Sullivan, Inc.

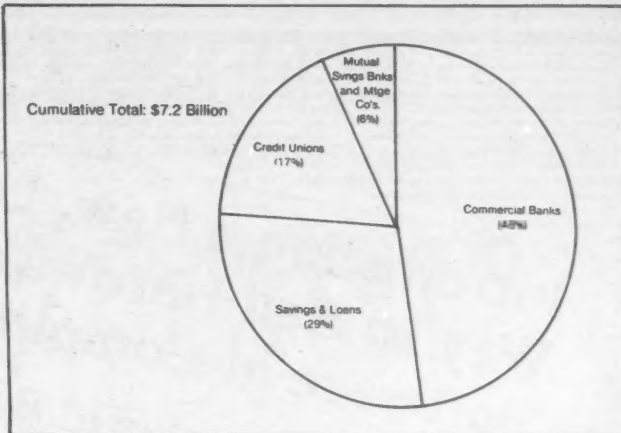
The study is titled *Office Automation in the Banking Industry*.

Eighty-seven percent of the financial institutions with less than \$500 million in deposits that responded to the study will install on-line, mini/micro systems over the next three years. Among the reasons cited by these financial institutions were lower costs, improved confidentiality and a gain in internal control.

Minicomputer Systems

Frost & Sullivan defines a minicomputer system as one that employs hard removable disks and a microcomputer system as one that employs floppy disks. Minicomputer systems will account for 88% of the total market or \$6.3 billion cumulatively during the decade, Frost & Sullivan said, and microcomputer systems will account for 12% or \$882 million during this period.

On-line applications will account for 80% of the microcomputer system expenditures, with mortgage-closing applications accounting for the re-



Minicomputers and Microcomputers in Retail Banking: Forecast of Shipments in the 1980 Decade

maining 20%, the report said. Micro systems are typically used in financial institutions with fewer than 5,000 accounts, according to Frost & Sullivan.

For minicomputer-based systems, on-line applications will reportedly account for about half of the total expenditures or \$3.1 billion.

Minicomputer Usage

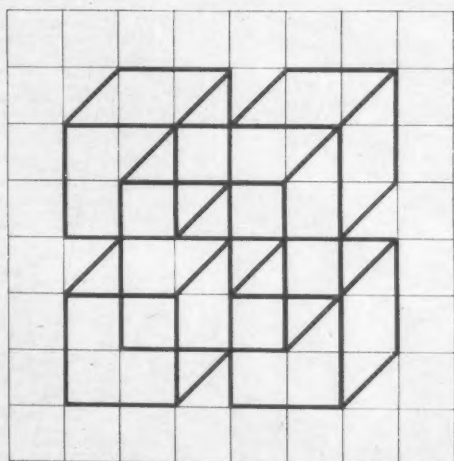
With minicomputer usage, according to the report, stand-alone appli-

cations will account for a \$1.7 billion cumulative market over the 10-year period and data communications applications will amount to \$1.1 billion market. Other retail banking applications covered by the forecast include general ledger, central information file, proof and transit, trust accounting and check truncation.

The study is available for \$1,000 from Consumer Service Department, Frost & Sullivan, 106 Fulton St., New York, N.Y. 10038.

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Bulletin Board ads come in standard units (one column wide by one inch deep) and standard typefaces. (Units may be combined to produce deeper ads, but one column is maximum width and no units of less than one inch are available.) Ads are arranged under headings (such as "IBM", "DEC" or "Software") and within headings, if necessary, by type of equipment. The first line of the ad is set in larger, bold type, and should be the standard equipment identification (such as "IBM S370/Mod 40"). (Headlines may be put on more than one line, if desired.) The body copy should describe the equipment very briefly, give the price and the person to contact. This is all the information an interested buyer needs to follow up. No ad should have more than one piece of equipment or software.

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How to Place an ad in The Bulletin Board.

Ads are accepted in the mail, over the telecopier or by phone. Ads can be accepted up until the Monday before issue (7 days in advance of issue date). You should write out your ad before submitting it, using no more than 12 characters (including spaces) per line for headlines, and no more than 28 characters (about 5 words) per line in the body copy using our standard typefaces. (A standard unit can take up to 12 lines of body copy, but each line of headline consumes the equivalent of two lines of body copy.)

Once you've written your ad, send (or call) it in with your name and address for billing purposes and we'll run it. (If your company has never advertised with us before, we request check with your order.)

Remember that all ads are standard. No special typefaces, no borders and no logos are allowed. Ads are set on a six-column page in our classified section under the heading "The Bulletin Board." We assume no liability for errors beyond the price of the ad in the case of material errors.

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\$30,000
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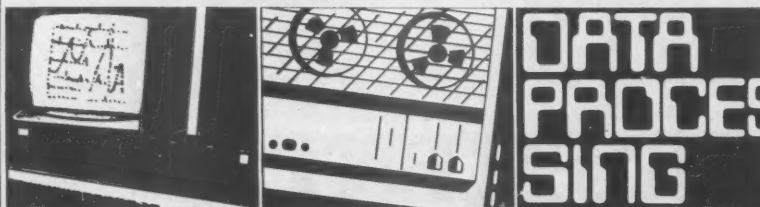
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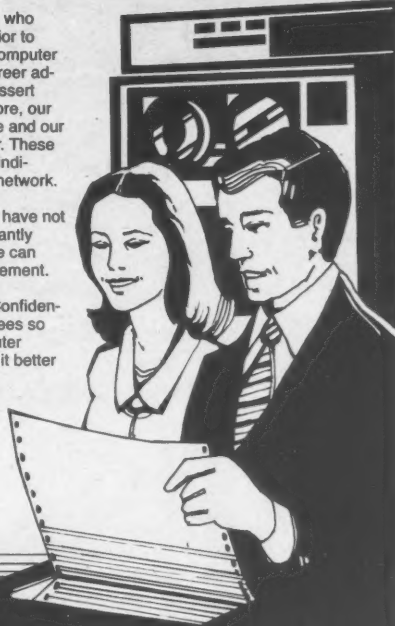
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CLEVELAND: Professional Staffing Systems, Inc.
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COLUMBUS: Michael Thomas, Inc.
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DALLAS: DataPro Personnel Consultants
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Dallas, Texas 75230 (214) 661-8600

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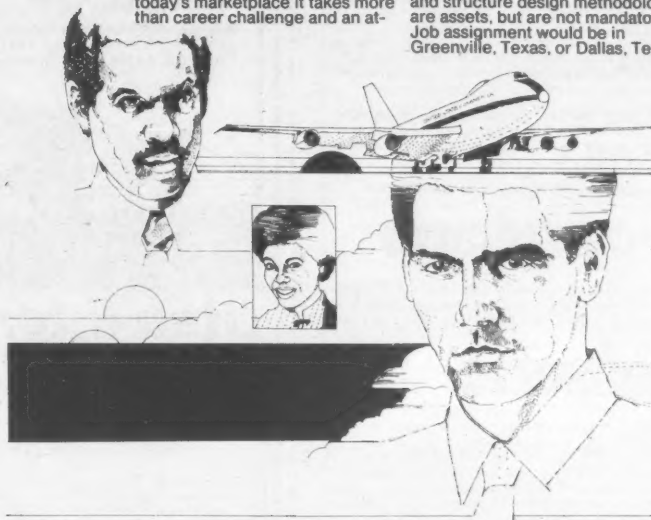


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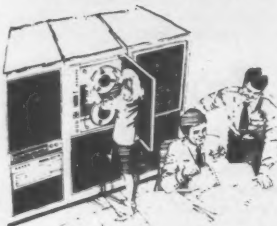
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systems analysts

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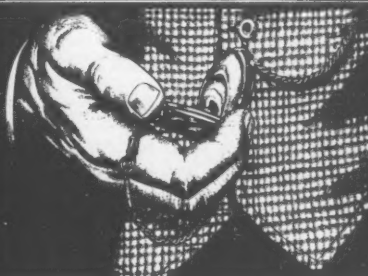
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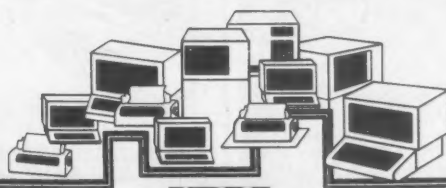
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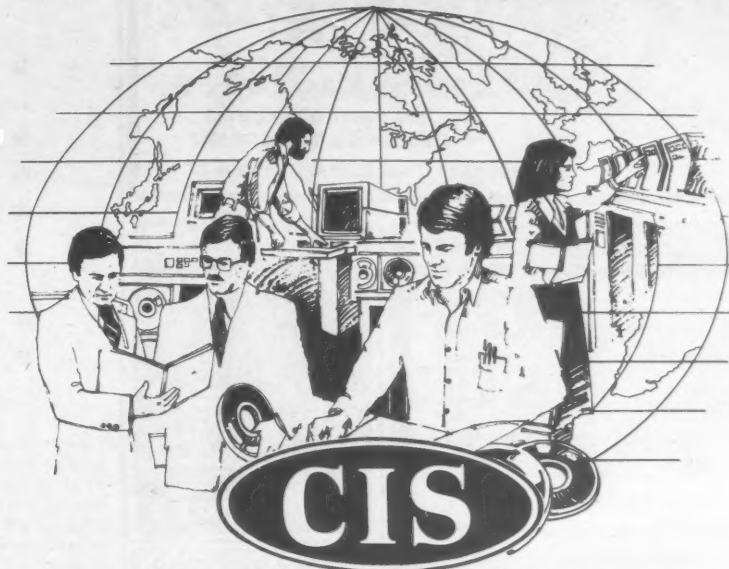
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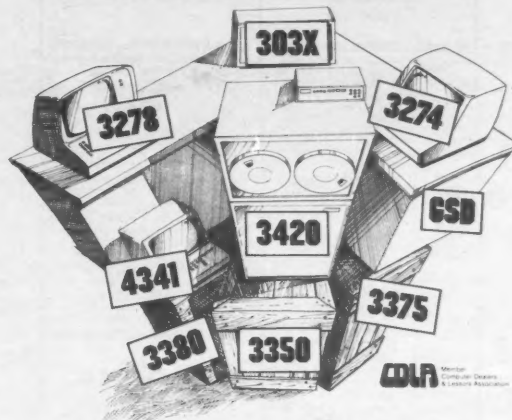
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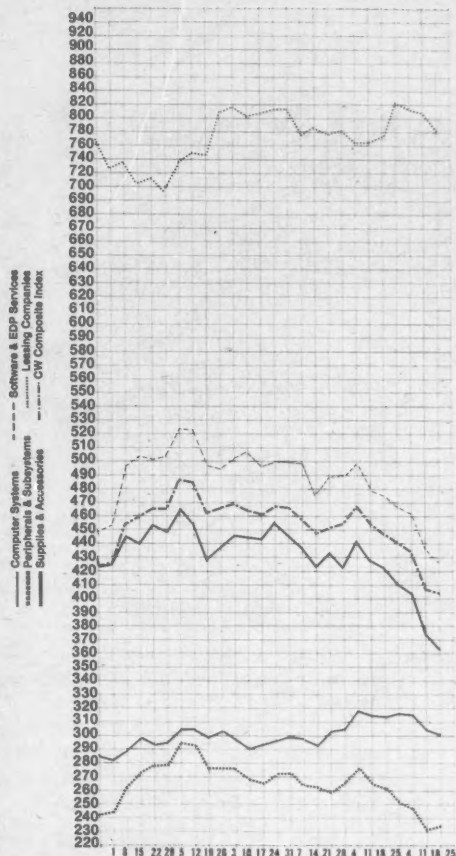
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Computerworld Stock Trading Index



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CLOSING PRICES WEDNESDAY, MARCH 17, 1982

E X C H	C O D E	PRICE					E X C H	C O D E	PRICE					E X C H	C O D E	PRICE				
		1981-82 RANGE	CLOSE MAR 17 1982	WEEK NET CHNGE	WEEK PCT CHNGE	1981-82 RANGE			CLOSE MAR 17 1982	WEEK NET CHNGE	WEEK PCT CHNGE	1981-82 RANGE	CLOSE MAR 17 1982			WEEK NET CHNGE	WEEK PCT CHNGE			
COMPUTER SYSTEMS																				
A	AMDAHL CORP	18-46	18 3/4	-3 7/8	-17.1	O	ADVANCED CORP TECH	1-8	1	-1	-50.0	E	COMPUTER CONSOLES	18-28	17 3/4	0	0.0			
N	BURROUGHS CORP	28-72	32 5/8	-2 1/4	-8.4	O	ADVANCED SYSTEMS INC	10-15	12 1/4	-3/4	-3.7	O	COMPUTER TRANSCIVER	3-9	5 1/4	-7/8	-14.2			
O	COMPUTER AUTOMATION	8-28	8 1/2	-1/2	-5.5	O	ANACON INC	10-18	10 1/8	-7/8	-7.8	N	COMPUTERIZATION CORP	20-40	25 3/8	+1/2	+2.0			
N	CONTROL DATA CORP	19-42	29 5/8	-2 3/8	-7.4	O	ANALYSTS INTL CORP	3-14	7 1/2	+1/4	+3.4	N	CONRAC CORP	17-28	22 1/4	-1/4	-1.1			
N	CRAY RESEARCH INC	25-49	26 3/4	-1/2	-1.8	A	APPLIED DATA RES.	13-25	17 1/2	-1 3/8	-7.2	O	DATA ACCESS SYSTEMS	2-23	1 3/4	-1/8	-44.0			
U	DATA GENERAL CORP	27-87	31 1/4	+1 3/4	+5.9	O	ARSTRADING CORP INC	2-9	2 1/4	+1/4	+33.3	O	DATAPRODUCTS CORP	17-44	18 1/4	+1/2	+2.8			
N	DATAPoint CORP	20-68	21 1/2	+1/4	+1.1	N	AUTOMATIC DATA PROC	22-32	29 1/4	+1/4	+1.0	O	DATUM INC	2-5	5 1/2	0	0.0			
N	DIGITAL EQUIPMENT	72-113	75 1/8	+3/8	+0.5	O	CGA COMPUTER ASSOC	4-25	5	-1/4	-4.7	O	DAVID JAMISON CARLTL	3-7	4 3/4	0	0.0			
A	EFEO INC	8-18	8 1/8	-5/8	-9.2	O	COMPUTER HORIZONS	1-5	3 1/4	-1/4	-12.5	O	DELTA DATA SYSTEMS	2-4	4 1/8	+1/8	+7.1			
N	ELECTRONIC ASSOC.	5-13	7 1/8	+1/4	+3.6	O	COMPUTER NETWORK	8-14	8	+1/4	+6.5	O	DATABAR CORP	4-15	5 7/8	+7/8	+17.5			
N	FOXBORO	42-62	47 1/2	-1 1/2	-3.0	N	COMPUTER SCIENCES	12-20	12 1/2	-3/8	-2.9	N	ELECTRONIC H & N	3-8	3 1/4	-4/8	-6.0			
O	FULCRUM CORP GRP	1-3	1/4	-1/4	-33.3	O	COMPUTER TASK GROUP	10-23	9 3/4	-1/4	-2.5	O	EVANS & SUTHERLAND	18-40	21	+1 1/4	+6.0			
O	GENERAL AUTOMATION	3-18	3 5/8	+1/4	+7.4	O	COMPUTER USAGE	2-10	2 7/8	0	0.0	O	FEDERAL COMPUTER SVR	1-12	4 1/2	0	0.0			
N	HARRIS CORP	28-50	29 1/4	+1/8	+0.4	O	CONSERV CORP	5-18	12	+1/4	+2.1	N	GEN L DATA CORP INC	1-18	1 1/8	-1/8	-1.7			
N	HEWLETT-PACKARD CO	33-54	38 3/4	+3/4	+1.9	O	CONSHARE	7-21	6 7/8	0	0.0	O	GENERAL TERMINAL CP	1-4	1/2	0	0.0			
N	HONEYWELL INC	63-115	65 1/4	-5 3/8	-7.6	O	CULLINANE DATABASE	15-37	28 1/4	-1/2	-2.0	N	HAZELTINE CORP	19-35	27 7/8	-1/8	-0.4			
N	IRI	49-73	57 3/8	-1 5/8	-2.7	O	CULLEN DATA INC	1-4	1	0	0.0	O	INFORMATION INTL INC	8-17	10 1/4	-1/4	-2.3			
O	ITT SYSTEMS INC	7-13	5 1/4	-2	-27.5	O	DATATAB	1-4	1	0	0.0	O	INTEL CORP	21-51	25 1/4	+1/2	+2.0			
O	MAGNUSON CORP SVR	3-32	2 1/8	-1/8	-4.1	O	DSI CORP	4-8	3 3/4	-3/4	-16.6	O	IPR SYSTEMS INC	5-15	5 1/4	+3/8	+7.6			
N	MANAGEMENT ASSIST	8-26	10 1/4	+3/4	+7.8	O	DYATRON CORP	3-11	3	-1/4	-7.6	A	LUNDY ELECTRONICS	7-18	7 1/4	+5/8	+7.8			
O	MINI-COMPUTER SYST	0-4	3/4	+1/8	+20.0	N	ELECTRONIC DATA SYST	15-30	20 1/4	+1/2	+2.5	O	MSI DATA CORP	11-27	16 5/8	+3/4	+4.7			
N	MODULAR COMPUTER SVR	7-32	7	+1/4	+3.7	O	INFORMATICS INC	10-23	14 1/4	0	0.0	O	NETWORK SYSTEMS CORP	14-25	14 7/8	-1	-6.2			
N	MODULAR DATA SCI	10-32	9 7/8	-1/2	-4.8	O	INSYTE CORP	1-3	1 5/8	-1/8	-7.1	O	OHEX	3-8	3	0	0.0			
N	NCR	38-78	41 1/2	-3/8	-0.8	O	IPS COMPUTER MARKET	1-4	1 1/4	+1/8	+11.1	N	PARADYNE CORP	25-52	31 1/4	+3/8	+1.2			
N	PRIME COMPUTER INC	17-49	18 7/8	0	0.0	O	KFAME ASSOCIATES	4-8	4	0	0.0	A	PENRIL CORP	7-17	8 1/4	+5/8	+8.1			
N	PERKIN-ELMER	18-36	18 7/8	+1 1/8	+6.0	A	LOGICON	12-38	12 1/8	-3/8	-3.0	O	RANTER CORP	9-23	12 1/8	-1/4	-2.0			
N	SPERRY CORP	27-65	26 3/4	-1 1/4	-4.4	O	PMGT SCI ANER INC	17-28	17 3/4	0	0.0	N	RECOGNITION FRUIT	4-21	4 1/2	-1/4	-5.2			
O	TANDEN COMPUTERS INC	13-31	23	-1/4	-1.0	O	MATHEMATICA INC	12-26	12 1/4	0	0.0	O	SCAN DATA	1-5	3/4	0	0.0			
N	TEXAS INSTRUMENTS	71-151	76 7/8	-1 3/8	-1.7	O	MATHEMATICAL APP GRP	14-28	14	0	0.0	O	STORAGE TECHNOLOGY	18-40	25 3/4	-1/8	-0.4			
A	UNIV. MICROFILMS	22-46	23	-7/8	-3.6	O	NATIONAL DATA CORP	14-28	14 1/2	0	0.0	O	SYKES DATATRONICS	8-34	20 3/4	+1/4	+1.2			
LEASING COMPANIES																				
O	BOOTH FINANCIAL CP	18-28	23	0	0.0	N	PLANNING RESEARCH	2-13	8 1/2	+1/2	+8.3	O	T BAR INC	12-19	14	+1/2	+3.7			
N	COMETSCO INC	18-27	21 5/8	-3/8	-7.7	O	PROGRAMMING & SYS	1-2	1 1/4	-5/8	-5.0	A	TEC INC	4-8	7 7/8	+1 1/8	+16.6			
N	COMMERCE GROUP CORP	1-2	1/2	0	0.0	O	REYNOLDS & REYNOLD	18-26	18 1/2	-1/2	-2.5	N	TEKTRONIX INC	43-70	44 1/2	+1 1/4	+2.8			
O	COMPUTER INVESTORS GRP	1-4	1/4	0	0.0	O	SEI CORP	17-28	22 1/2	-1/2	-2.1	N	TELEX	5-9	7 1/4	+1/4	+3.5			
O	CONTINENTAL INFO SVR	4-8	5	-1/2	-5.7	O	SCSC INC	6-28	6	0	0.0	O	TESDATA SYSTEMS CP	5-17	5	-1/2	-2.4			
N	DFP INC	5-13	9	-1/4	-2.7	O	SCIENTIFIC COMPUTERS	8-16	8 3/8	+1/8	+2.0	N	TIMEPLEX INC	7-19	7	0	0.0			
O	ITEL	1-3	1 1/8	-1/8	-10.0	O	SOFTWARE AI	7-23	7 1/4	-1/2	-6.4	O	WILTER INC	1-3	1 5/8	+1/8	+8.3			
O	LEASPCO CORP	1-2	1/8	0	0.0	N	TYNSHARE INC	18-58	18 1/4	+3/8	+3.5	SUPPLIES & ACCESSORIES								
N	U.S. LEASING	18-30	22 1/2	-1 1/4	-5.2	A	UNICORP	11-18	11	0	0.0	N	AMERICAN BUS PRIDE	11-17	11 3/4	+1/8	+1.0			
PERIPHERALS & SUBSYSTEMS																				
N	AN INTERNATIONAL	2-25	1 7/8	-1/4	-11.7	N	AMERICAN BUS PRIDE	11-17	11 3/4	+1/8	+1.0	O	BALTIMORE BUS FORMS	1-2	1 1/4	0	0.0			
A	ANDERSON JACOBSON	8-28	9 1/4	-1	-9.7	O	BALTIMORE BUS FORMS	1-2	1 1/4	0	0.0	N	BARRY WRIGHT	13-24	16 5/8	0	0.0			
O	AUTO-TRON TECHNOLOGY	8-22	9 1/2	+11.7	+11.7	A	CYBERNETICS INC	1-2	1	0	0.0	O	CYBERNETICS INC	1-2	1	0	0.0			
O	BANCTEC INC	14-35	14	-4	-22.2	N	DUPLEX PRODUCTS INC	12-17	13	-1/4	-1.8	N	ENNIS BUS FORMS	15-23	16 5/8	-3/8	-2.2			
O	BECHTEL INT'L	8-18	8 3/8	-3/8	-5.5	O	ENNIS BUS FORMS	15-23	16 5/8	-3/8	-2.2	N	IN COMPANY	48-85	48 7/8	-1 3/4	-3.3			
A	BIT-REMARK & NEW	8-25	12 5/8	+1/2	+3.8	O	HOPE CORP LTD	27-38	31	-1/2	-1.5	O	MOORE COMP LTD	27-38	31	-1/2	-1.5			
O	CANEX CORP	2-8	2	0	0.0	N	NASHUA CORP	18-39	18 1/2	0	0.0	N	NASHUA CORP	18-39	18 1/2	0	0.0			
N	CENTRONICS DATA COMP	7-40	9	+1/2	+5.8	O	STANDARD REGISTER	30-41	38 3/4	+3/4	+2.0	O	STANDARD REGISTER	30-41	38 3/4	+3/4	+2.0			
A	CETEC CORP	4-8	4	0	0.0	A	TAB PRODUCTS	14-30	14	-1/2	-4.0	N	HALLACE BUS FORMS	22-38	27 5/8	-7/8	-3.0			
O	COMPUTER DEVICES INC	4-10	5	+3/8	+12.5	O	HALLACE BUS FORMS	22-38	27 5/8	-7/8	-3.0									
O	COMPTONICS	2-11	2 3/8	0	0.0															
O	COMPUTER COMMUN.	1-2	7/8	+3/8	+75.0															

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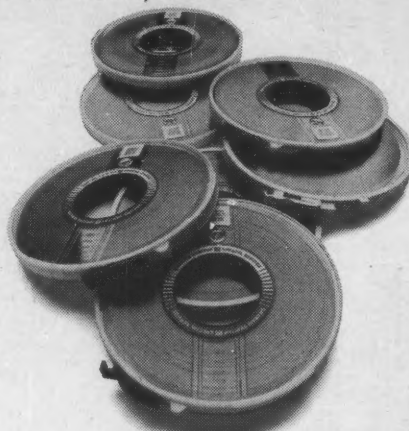
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